INDIA RUBBER WORLD

Volume 82 | July 1, 1930 | Number 4

Henry C. Pearson, F. R. G. S., Founder

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Articles

Published on the first of each month by Federated Business Publications, Inc., 420 Lexington Ave., New York, N. Y. Publishers of *Antiquarian, Automotive Electricity,* India Rubber World, *Materials Handling & Distribution, Music Trade Review, Novelty News, Rug Profits, Sales Management, Soda Fountain, Talking Machine World & Radio-Music Merchant, Tires;* and operates in association with *Building Investment, Draperies,* and *Tire Rate Book.* Cable Address, Elbill, New York. Subscription $3.00 per year postpaid in the United States; $3.50 per year postpaid to all other countries.

INDIA RUBBER WORLD

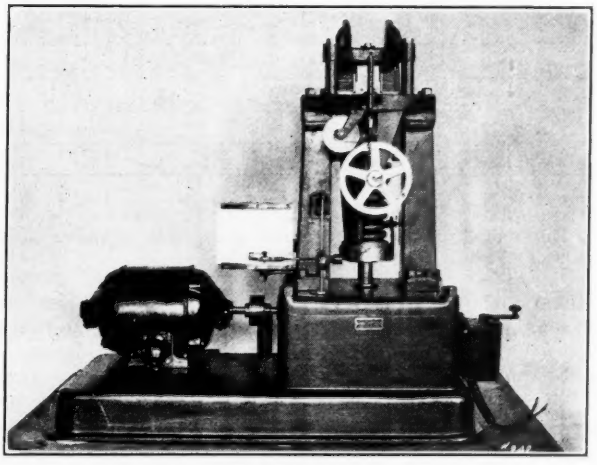
Published at 420 Lexington Avenue, Graybar Building, New York, N. Y.

Volume 82 **New York, July 1, 1930** **Number 4**

Some Studies Relating to the Compression and Shear Resistance of Rubber

J. H. INGMANSON[1] and A. N. GRAY[2]

IN the past the most important method for the evaluation of vulcanized rubber has been by determination of tensile stress-strain properties. The widespread use of rubber particularly in the automotive field for damping vibration and absorbing shock has created a need for a more complete knowledge of the properties of rubber under compression. As a matter of fact, rubber in use is subjected to compression and shearing to a far greater extent than to tensile stresses. Recently, a machine for determining the compression properties and shear resistance of rubber was described by Hippensteel.[3] This machine was designed to test rubber rapidly under compression and simultaneously to record autographically the strain under compression stress. To date it has been used primarily for the purpose of controlling the quality of rubber covered wire used by the Bell System. Sufficient work, however, has been completed to show that it can be used to determine the shear and compression resistance of rubber stocks in general, and it is felt that these methods may find a general application in the evaluation of vulcanized rubber.



Henry L. Scott Co.

Compression Rubber Testing Machine

Important requirements for a rubber insulation other than electrical are taken to be (1) resistance of the insulation to cutting by the conductor, (2) centralization of the conductor, (3) some degree of adhesion between conductor and insulation, and (4) a reasonable maintenance of these properties for a considerable period of time when the wire is exposed in service to a wide variety of climatic conditions. The compression machine and the Bierer and Davis oxygen bomb have been found to be suitable testing instruments for evaluating wire in respect to the above requirements.

The compression test as applied to rubber covered wire involves the compression of a two-inch length of insulated wire between steel blocks with parallel plane surfaces which are brought together at a rate of approximately 1½ inches per minute when not under load. The result of this treatment brings about an ultimate shear of the rubber between the conductor and one or both of the jaw faces. The occurrence of simultaneous breaks on both sides of the conductor on successive tests made on adjacent sections turned 90° from one another is taken as an indication of centralization of the conductor. Examples of the compression stress-strain relationships on several types of rubber covered wire are shown in Figure 1.

This test is applicable only in cases of solid conductors and where the wall thickness of insulation does not appreciably

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[3] *Ind. Eng. Chem.*, 18, 409-11 (1926). *Bell Laboratories Record*, 5, 153-55 (1928).

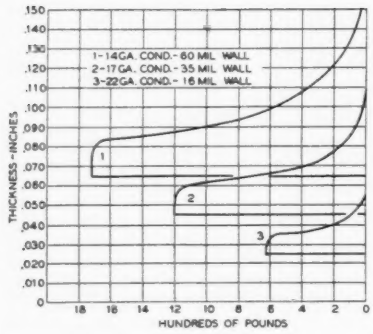


Fig. 1. Compression Characteristics of Three Types of Rubber Covered Wire

exceed the diameter of the conductor. In the case of stranded conductors or where wall thickness of insulation is great, the insulation may be evaluated by shear tests made on the insulation after removal from the conductor with a mandrel having a cutting edge similar to a conductor.

It has been found that the compression resistance of rubber insulation on a wire can be resolved into three main components: namely, the shear or cutting resistance of the rubber between the jaws of the machine and the conductor; the actual compression resistance of the rubber on each side of the conductor between the two jaw faces; and the adhesion of the insulation to the conductor.

The shear load or resistance to cutting is determined by compressing to rupture between one jaw of the machine and a mandrel, a piece of the insulation which has been split longitudinally after removal from the conductor. The mandrel which is mounted in the head of the machine is generally selected to have a cutting edge with a radius of curvature the same as that of the conductor. The effect of sidewall compression and adhesion are entirely eliminated in this test.

The adhesion is evaluated by determining the load necessary to rupture the insulation on the wire before and after a period of immersion in mercury sufficient to amalgamate the tin coating and loosen the insulation from the conductor. The difference between the original compression load and that obtained on the loosened insulation is attributed to adhesion.

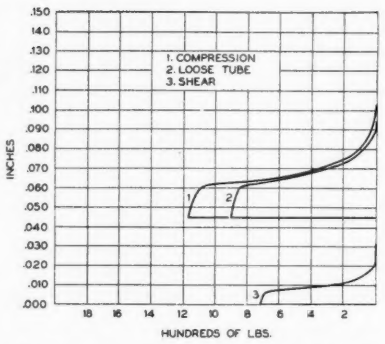


Fig. 2. Compression, Shear, and Loose Tube Characteristics as Determined on 17 Gage Conductor with 1/32 Rubber Insulation

The difference between the compression load obtained on the loosened insulation and the shear load obtained on the half section with the mandrel is attributed to sidewall compression.

An autographic record is traced on a card by the machine showing in detail the course of the compression or shear and the rupture. Figure 2 is a typical record showing these various components in the case of a 17 B. & S. gage rubber insulated conductor. The character of the curve traced, the sharpness of the rupture, and the thickness of the insulation at break indicate to a considerable degree the type of materials composing the insulation and their physical condition.

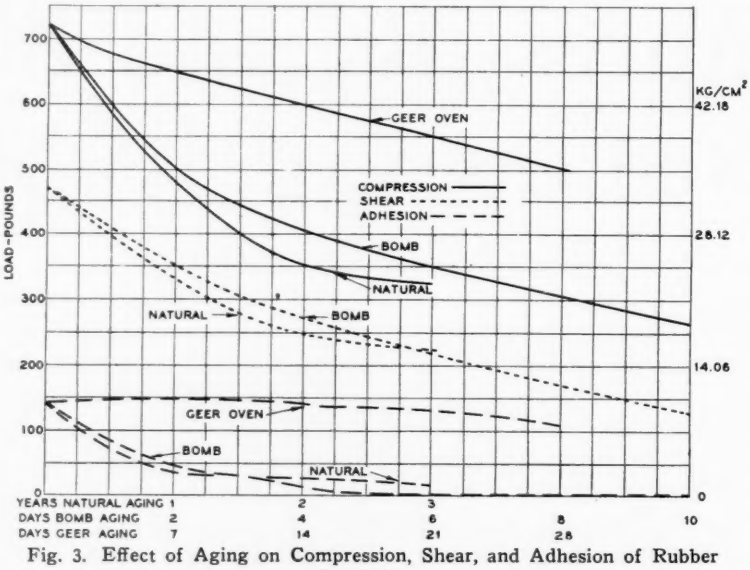


Fig. 3. Effect of Aging on Compression, Shear, and Adhesion of Rubber Insulation

Figure 3 shows the comparative magnitude of the load factors involved in testing one type of rubber covered wire used with progressive aging, and Figure 4 shows averages of tensile, elongation, compression, and shear tests made on a large number of commercial insulated wires after bomb aging. Data are given on wire aged in the Bierer and Davis oxygen bomb for 3, 5, and 10 days at 70° C. and 300 pounds' oxygen pressure, wire aged in the Geer oven at 70° C. for 7, 14, 21, and 28 days, and wire subjected to natural aging for 6 months, 1, 2, and 3 years.

The data in Figures 3 and 4 show that adhesion of insulation to conductor decreases rapidly on aging. This has been found to be true in service. Adhesion often is extremely variable, sometimes accounting for as much as 40 per cent of the original load. For this reason a more nearly true measure of the quality of the insulation is obtained by shear tests before and after artificial aging. It will be seen that for the type of rubber compounds in use on this wire artificial aging in the Geer oven is very

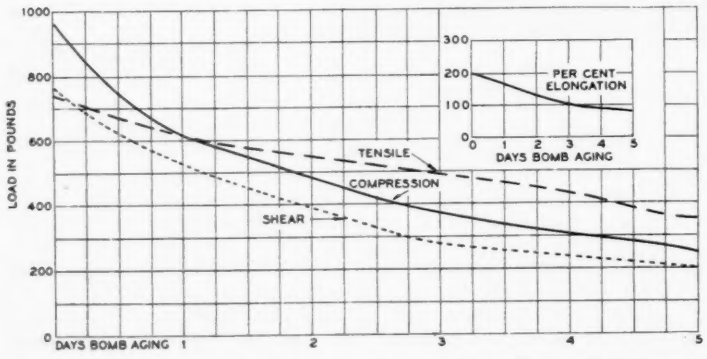


Fig. 4. Effect of Bomb Aging on Compression, Shear, Tensile, and Elongation. Average Values as Determined on a Number of Types of Commercial Rubber Covered Wire, 14 Gage Conductor, 5/64 Wall Insulation

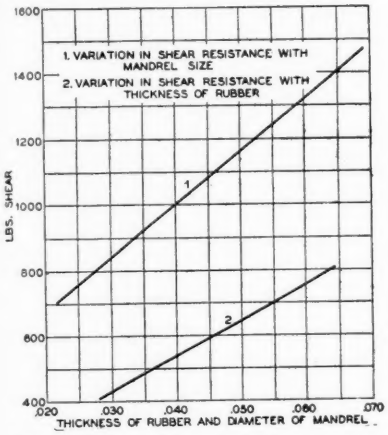


Fig. 5. Effect of Mandrel Diameter and Thickness of Rubber on Shear Load

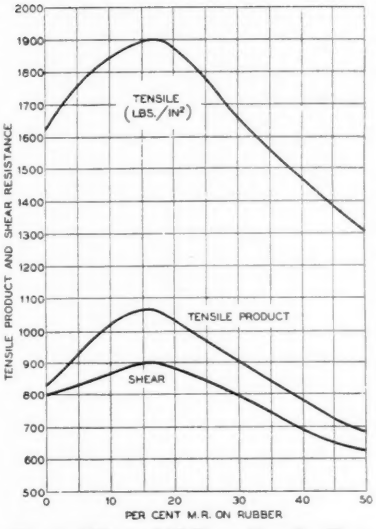


Fig. 6. Effect of M.R. on Tensile, Tensile Product, and Shear Resistance

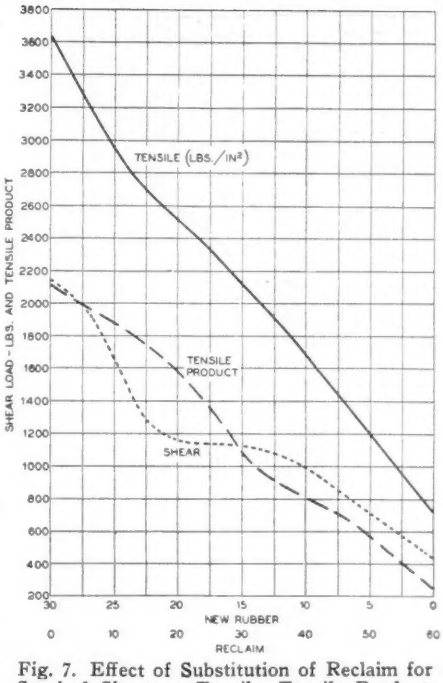


Fig. 7. Effect of Substitution of Reclaim for Smoked Sheet on Tensile, Tensile Product, and Shear

slow, while aging in the Bierer and Davis oxygen bomb at 70° C. and 300 pounds' oxygen pressure corresponds fairly well with natural aging.

The Shear Test as a General Method for Evaluating Rubber

Aside from its use in testing rubber insulation for wire, for the past three years we have used the shear test generally in the course of evaluating all kinds of rubber stocks. The rubber test pieces have been standard molded or calendered sheets about 30 mils thick. These sheets were placed on the lower jaw of the machine and forced against a shearing member mounted in the fixed upper jaw. The shearing device consists, as in the insulation test, of a raised mandrel having a cutting edge two inches long with a suitable radius of curvature. It is, of course, apparent that the shearing load will be affected by the thickness of the rubber sheet and the shape and dimensions of the shearing tool. Figure 5 shows the relation of shearing load to thickness of rubber and to diameter of mandrel.

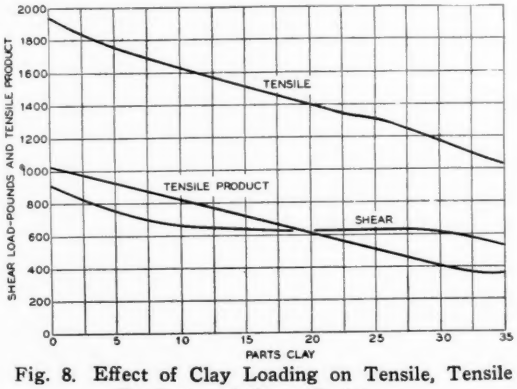


Fig. 8. Effect of Clay Loading on Tensile, Tensile Product, and Shear Resistance

In Figure 6 is plotted the tensile product, shear resistance in pounds, and tensile strength of a series of compounds containing varying quantities of a mineral rubber having a softening point of 265° F. The base compound had the following composition:

Smoked sheets	15.0
Reclaimed rubber	30.0
Zinc oxide	2.5
Stearic acid	1.5
Sulphur	1.5
Accelerator	.5

The cure giving maximum tensile product was chosen in each case for test. For our purposes tensile product is taken as the product of tensile strength in pounds, and elongation in per cent dividend by 100. Maximum physical properties are shown on both the shear curve and the tensile product curve for the same composition. The two curves correspond

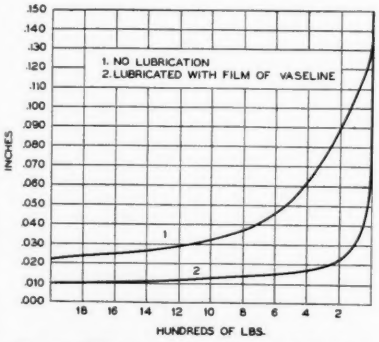


Fig. 9. Effect of Lubrication of Surface on Compression of a Pure Gum Stock

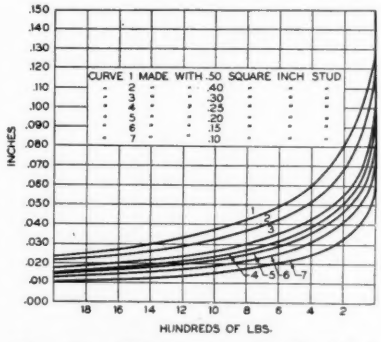


Fig. 10. Effect of Cross-Sectional Area of Compression Stud on Compression of a Solid Tire Stock Lubricated Surface

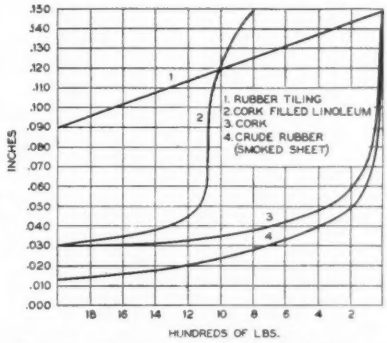


Fig. 11. Compression Characteristics of Various Materials

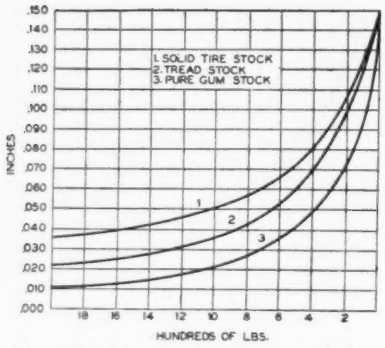


Fig. 12. Compression Characteristics of Various Rubber Compounds (Shelf Aged 6 Months)

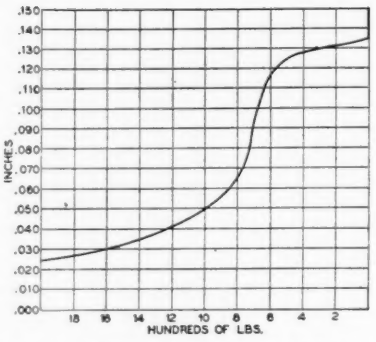


Fig. 13. Compression Characteristics of Pure Balata (Thickness 138 Mils)

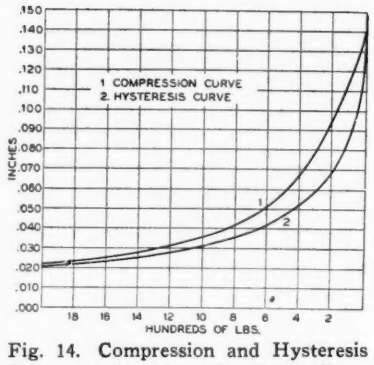


Fig. 14. Compression and Hysteresis Characteristics of a Tire Tread Compound

fairly well for practically all types of rubber compositions.

In Figure 7 are plotted tensile product, shear resistance, and tensile strength curves for a series of compounds based on the above formula in which whole tire reclaim was substituted for smoked sheets in the proportion of two parts reclaim for one part crude rubber. Again it is evident that the shear test simulates very closely tensile product.

The tensile product, shear resistance, and tensile strength for a series of compounds based on the above formula to which a clay filler has been added are plotted in Figure 8. It is of interest to note that small additions of filler cause an immediate drop in shear with very little change until about 30 per cent has been added, while tensile product and tensile per square inch show a straight line degradation in physical properties for each succeeding addition of loading material.

The values for tensile product have been found to correspond very well with the shear loads in a wide variety of rubber compounds such as tire treads, hose, packing, and heel stocks, and lead to the same relative rating of their merits. This method also differentiates between stocks containing such fillers as barytes, whiting, zinc oxide, and carbon black in a manner to give results comparable in value with those obtained by the tensile stress strain method.

The shear method has several advantages over the usual tensile methods. A sample of such size as to be unsuitable for the tensile test can be easily evaluated by the shear test and, in addition, the values obtained are not subject to variation in samples caused by slight defects such as cuts or agglomeration of filler particles to any marked degree.

Compression Testing of Rubber

As regards the general application of the machine to the compression testing of rubber, several methods have been employed. A flat piece of rubber, either circular or rectangular, has been placed between the flat jaws of the machine and compressed under various loads. Springs giving ultimate loads of both one and two thousand pounds have been used in the testing machine. Similar samples of rubber have also been compressed between the end faces of two cylindrical steel studs having diameters corresponding to those of the samples. The most promising method, however, appears to be that of forcing a cylindrical steel stud into a thick sheet or block of rubber.

The condition of the surface of the sample governs to a considerable extent the amount of distortion obtained with a given load. Figure 9 shows compression curves made with a steel stud having a diameter of 0.625-inch on a sheet of pure gum stock 150 mils thick with and without a lubricated surface.

Figure 10 shows different curves which were obtained on a specimen with studs of various cross-sectional area.

Compression curves entirely different from one another in character were obtained in testing the wide variety of commercial rubber stocks and other deformable materials available commercially. In Figures 11, 12, and 13 are shown compression curves for rubber tiling, a linoleum flooring composition, cork, purified balata, smoked sheet, a solid tire compound, a tread compound, and a pure gum stock.

By quickly reversing the machine and repeating the compression curve the hysteresis quality of a specimen of rubber can be determined. This may prove to be of use in evaluating the properties of compounds employed under constant compression for example for engine mountings in motor cars. In Figure 14 are shown compression and hysteresis curves for a tire tread compound.

Conclusion

1. A method for evaluating rubber covered wire by correlating compression, shear, and adhesion tests with bomb aging has been described.
2. It has been shown that the shear test described can be used for evaluating vulcanized rubber compositions with certain advantages over tests commonly in use.
3. Methods and some few data regarding the compression characteristics of several rubber stocks and other deformable materials have been given.

Notice to Importers of Liquid Latex

Importers of liquid latex and latex concentrates in the form of liquids or pastes are requested by the Chief of the Rubber Division, United States Department of Commerce, to specify clearly on "importer's declarations" filed with the Customs, the actual dry rubber content in pounds of all latex imported, so that accuracy of the import statistics on rubber may be assured. This practice already is being followed by leading importers.

This notice should be brought to the attention of clerks who prepare the importer's declarations, and care should be exercised to show accurately the dry rubber content of latex imports. The variance in dry rubber content of different latex concentrates makes it desirable to use a regular conversion factor for estimating the dry rubber content from declarations showing liquid latex imports in gallons only. The practice of estimating imports in pounds on the basis of 3 pounds of dry rubber per gallon of latex will be discontinued.

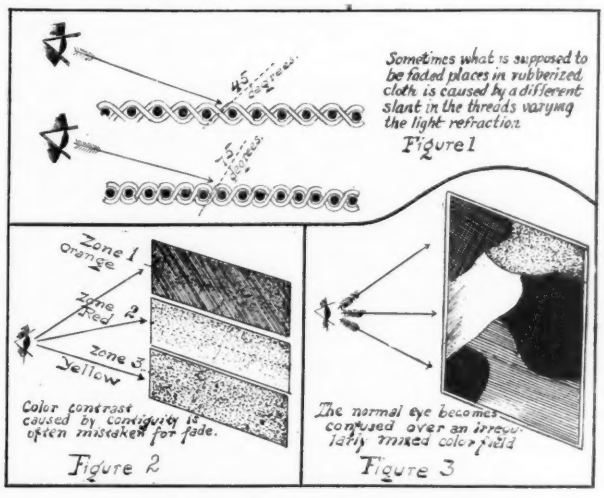
SEVERAL MAKES OF FOREIGN CARS ARE NOW FEATURING the Husted safety steering wheel on 1930 production models. Last year the Husted steel core, hard rubber enclosed wheel was supplied as regular equipment on over 1,300,000 American cars, including many of the leading makes.

The Fading of Colors in MANUFACTURED RUBBER GOODS

Visionary Fading Is Not Real Fading

GEORGE RICE

ALLOWANCES must be made for eyesight defects and illusive conditions when rubber goods are examined to ascertain whether the color has faded, and if so, what was the reason. In a recent arbitration case the reason was sought for discolorations in some fine woolen fabrics which had been rubberized previous to being made into rainproof garments. The colors were in pastel blue and heart of lettuce green, and the cloth while heavy enough to be waterproof was satiny and not at all stiff. It was claimed that the color tones were selected by Lelong, the Parisian couturier, which assertion was no doubt made by the manufacturers for publicity purposes.



Illustrating the Visionary Fading of Colors

By placing the goods on a level surface where the light could strike them in full force, it was plain to see that there were slatty places extending in the direction of the filling threads. These slatty places made the fabric look as though the color had faded in streaks. However, careful examination revealed a condition existing in the cloth like that shown in Figure 1, recognized in the textile mills as tight and loose weaving in the same piece of cloth. In this particular case the let-off-mechanism of the warp was mechanically defective and permitted the warp yarns to weave tight for an inch or more and then loose for an equal distance.

The loose weaving is represented in the upper section of the drawing in which it can be seen that the warp threads, extending from right to left, are interwoven at a longer angle than the corresponding threads in the lower section, which is woven tight. The interstices in the upper section being wider, the stretch of the warp yarns is longer with each evolution, so that when the cloth is viewed as it lies flat, the eye sees these yarns at an angle of 45 degrees, whereas in the tightly woven section the eye sees these same yarns at an angle of 75 degrees.

It is simply a matter of light refraction for the light reflects differently on the long slanting threads from that which it does on threads of a shorter incline. This is precisely what happened in the lot of rubberized fabrics referred to. The coloring had been properly accomplished, and there was no fade in the color. The streaky condition was due entirely to a variation in the texture of the fabric.

No man should assert that color on a rubber article had faded or become dimmed unless he is sure of his eyes. Myopia, which is short sight, confuses both a color and an image in the eyes of a person thus afflicted, because both color and image become focused a little in front of the retina of the eye instead of directly upon it.

Nor should a man troubled with presbyopia, which is long sight, undertake to prove a rubber color had faded because the apparent fade may be due to his eye defect. In presbyopia the crystalline lens of the eye is not sufficiently convergent, so that the light rays from a color or from any object, form too far in front of the retina of the eye to present anything but a confusion of shades or outlines of objects. Both myopia and presbyopia can be corrected to a certain extent with glasses, but as a rule it is safer to trust color fading decisions with men whose eyes are in good order.

Even perfect eyesight sometimes is beguiled into supposing that a color has faded on rubber when in reality the faded aspect is nothing more than color contrast caused by the law of contiguity as shown in Figure 2. Suppose that a rubber garment or other article contains a color scheme in which there is a red area between an orange and a yellow area. Then we will have three color zones side by side.

A discussion arose in the sales department of a distributing organization concerning the real or the illusive fading of some red stripes in the presence of orange and yellow stripes in a fancy rubber garment designed for street wear in damp weather. It was simply a reciprocal modification of the red color due to the juxtaposition of the orange and yellow. The orange in Zone 1 not only tended to heighten the tone of the red in Zone 2 but imparted a pale violet tinge, and it was claimed the red had lost its luster through fading.

The yellow on the other side, in Zone 3, lowered the tone of the red to such extent that it was thought that the red was fugitive. Colors on rubber are acquiring a remarkably good splendor and purity when applied according to the scientific methods of the present time, and most of them are fast. It is best, therefore, to be assured that the supposed fading of a certain color in a pattern is real fade, or merely illusive fade due to light refraction or by reason of the modifying effects of another adjacent color. You can make a stripe of pure white rubber lose some of its lily whiteness by placing a colored stripe alongside, as the white will be slightly changed by the complementary color of the stripe.

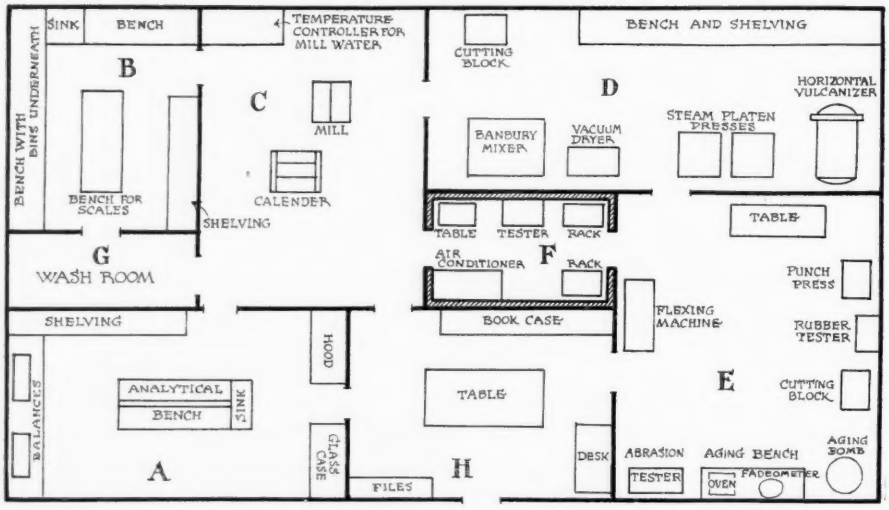
An irregularly mixed color field, such as is shown in Figure 3, confuses the vision of men whose eyes are normally perfect. The eyesight may be defective or deceived by color combinations or because the conditions are such that a fair dialysis cannot be made. Color on any commodity should be given a fair test before concluding that it had weakened.

Rubber Testing Laboratory

WEBSTER NORRIS

THE attempt of the Physical Testing Committee to assist the rubber laboratories in the United States to standardize their test procedure, according to the plan reported in the May issue of this journal, deserves endorsement and coöperation by rubber chemists, technologists, and testing engineers generally. In furtherance of the standardized laboratory idea the following suggestions are offered to extend the completeness of its equipment.

The laboratory plan shown herewith is offered only as a workable arrangement following the general scheme of one of the newest rubber testing laboratories in America.[1]



A, Analytical; B, Compounding; C, Mill and Calender; D, Presses, Vulcanizer; E, Testing; F, Sample Conditioning; G, Washroom; H, Office and Library

The rooms are intercommunicating and laid out so that the work progresses in orderly sequence from start to finish, thus saving steps.

The analytical room A should contain specific gravity balance, analytical balances, and also balances of larger capacities. In order to promote the use of the metric system, all weights should be in metric units and all thermometers calibrated in Centigrade degrees. The analytical equipment should consist of water still, a battery of extractors, flasks, filters, furnaces, hot plates, and the usual chemical apparatus and reagents. Ample hood space with adequate forced draught is a necessity.

Compounding room B should be equipped with spacious benches on which may be placed drop-lid cans for holding powders, and under which bins may be built to store rubber in the dark. At least three sizes of scales are desirable with different capacities and corresponding accuracy.

In the mill room C the mills may be individual or line driven; in either case locating the motor beneath the mill bed plate saves valuable space. Mills should conform to every specified standard as to roll diameter, roll length, working distance between the guides, speed, dials for indicating roll opening, and equipment for controlling the temperature during mixing. If a calender is provided, it should be supplied with the proper accessories such as wind up, let off, knives, guides, shells, and liners.

Supplementary to the machinery in room C the mixing equipment is improved by the addition of a laboratory-size Banbury mixer in the adjacent room D. It facilitates the mixing of black and heavily loaded batches, and liquid mixes may also be made in it. A vacuum dryer although not essential is frequently a very useful machine.

In the vulcanizing room D, also, the platen presses should be designed to develop ample pressure and be carefully installed to secure complete drainage of water and uniform heating. The very best temperature controllers and thermometers available should be installed on the presses and vulcanizer. An electrically opened and closed press is very satisfactory for laboratory use. Besides eliminating hydraulic equipment it may be used to open the mold when the cure is completed. Moreover the mold is not subject to cooling while being unloaded and reloaded. Molds should be of standard material, size, and shape.

The horizontal vulcanizer, if jacketed, may be used for both open steam and dry heat cures, and a quick-closing door will soon earn its cost in saving of time. A cutting block with soft metal top should be used for uncured rubber.

In the testing room E the testing machine should be standardized for jaw speed, and additional speeds may also be supplied. The shape and size of the test piece die has been carefully standardized also, and particular care should be given to keeping the die sharp. The flexing machine has been standardized by the A. S. T. M.

The aging bomb should be located outside the main building with proper protection against explosion. Bomb operating controls may be located inside the main building at a convenient place. A good close range heat regulator should be used to insure uniformity of temperature.

A special abrasion tester is used for evaluating wear resistance. For this machine, compressed air under at least 40 pounds' pressure is needed, and it is essential that the air be absolutely free of water and oil.

The humidified room F should be well insulated, preferably with cork, and designed to operate at the standardized conditions of humidity and temperature.

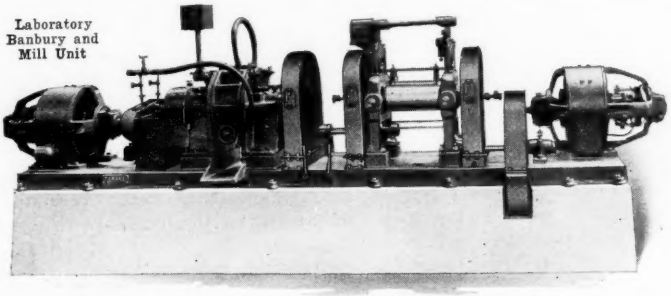
A few tables should be provided for laying out stocks in process. Both cured and uncured stocks are easily and economically handled on screen trays fitting in racks on wheels. These trucks need not be elaborate but are very useful when a number of stocks are to be transferred in or out of the conditioned room as quickly as possible.

For the convenience of the staff a washroom G should be supplied. The reservation H in the suggested plan provides the laboratory director with office space and facilities for consultations, record keeping, and correspondence and affords convenient access to the various laboratories and work rooms.

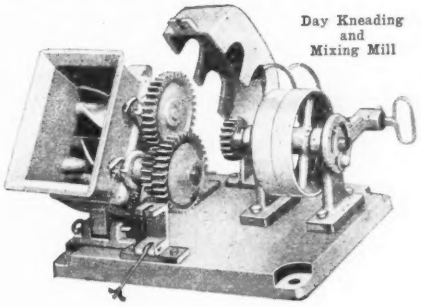
[1] R. T. Vanderbilt Co., Inc., New York, N. Y.

STANDARD LABORATORY EQUIPMENT

Laboratory Banbury and Mill Unit

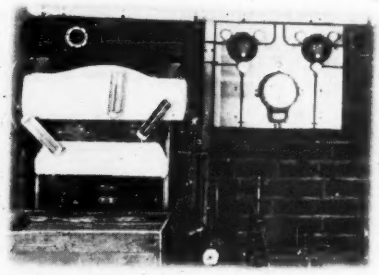


Day Kneading and Mixing Mill

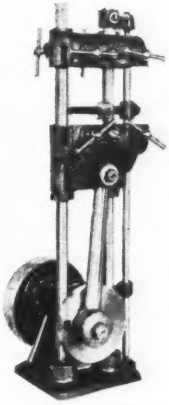


Scott Tester

du Pont Abrader

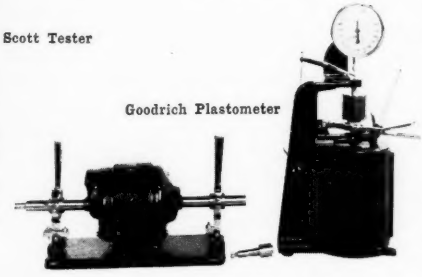


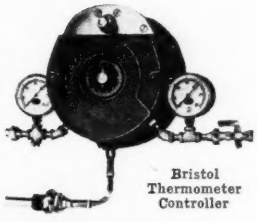
Tycos Laboratory Instruments



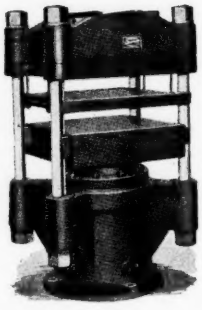
De Mattia Fatigue Tester

Goodrich Plastometer

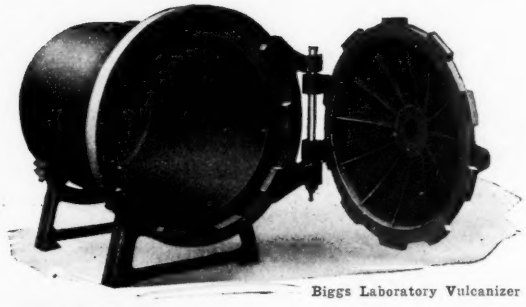




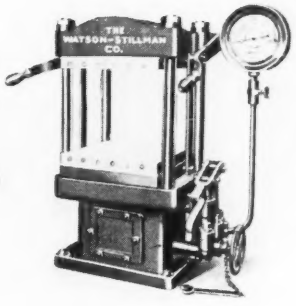
Bristol Thermometer Controller



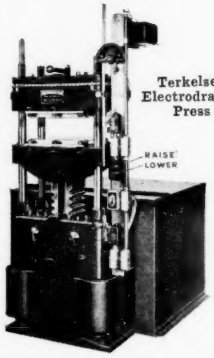
Adamson Press



Biggs Laboratory Vulcanizer



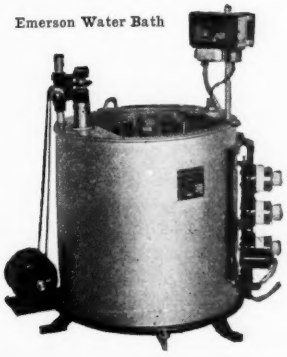
Watson-Stillman Press

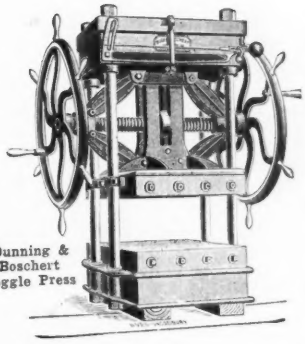


Terkelsen Electrodraulic Press

National-Erie Knock Press

Emerson Water Bath





Dunning & Boschert Toggle Press

Continuous Vulcanization *of* Rubber Fabrics

An Interesting Machine and Process of German Origin

CONTINUOUS vulcanization is particularly feasible in the cases of calendered rubber and rubberized fabrics that are merchandised as cured in the roll without subsequent manufacture. The matter of slightly scorching the calendered coating, should that occur, is unimportant, not to say advantageous in the scheme of continuous vulcanization as conducted with the machine, the operation of which is indicated in the accompanying diagram.

The mechanism is motor driven, direct connected at roller *A*. The speed necessary for vulcanization of the goods passing through the machine is controlled by a reducing gear. A conveyer belt *B* connects roller *A* and curing drum *C*. It serves to transmit the driving power to *C* as well as to convey the runner and fabric through the machine. The belt tension is regulated by adjustable weights on the lever *D*.

The upper guiding roller *E* has adjustable bearings. With the aid of hand wheels *F* on each side of the machine this roller can be adjusted to or from the driven hot drum *C*. This results in applying downward pressure to the rubber surface to be cured, which lies between the conveyer belt and the curing drum. The surface of *C* may be either plain or have a pattern upon it for transfer under pressure to the rubber face of the goods being cured.

The top frame *G* is notched to serve as a rack for storage of goods on shells awaiting vulcanization. The vulcanized fabric and runner is wound on the roller *H* after cure. The ends of the carrier bar which supports this roller rest on the inclined arms *I*, keeping the material being rolled upon it in continuous touch with the conveyer belt from which it receives its motion. The top frames *G* are collapsible, making possible a quick change of drum *C*. To do this the roller housings *J* are pushed back and the drum is lifted out with the aid of a chain block.

A rubber faced burlap runner is used as backing for the material to be vulcanized. In threading up for operating a cure the calendered goods and the runner are passed through the machine together. Plain finish or embossed pattern surface is given to the rubber face on the goods through pressure applied by the roller *E* against the drum *C* at the time when the uncured sheet, backed by the runner, passes into the machine under the idler *K*.

The freshly calendered goods should not be wound up too hot. If not to be cured immediately after calendering, and no cooling drum is at hand, the freshly run hot sheet can be cooled by slowly rerolling it. The cooled stock will then unroll freely as it enters the curing machine.

Vulcanization is conducted as follows: Roller *L*, carrying the runner, is so placed on the frame *G* that during unwinding, the cloth side of the burlap runner is turned toward the conveyer belt. The calendered sheet on roller *M* is started so that the stock is fed via the idler roller *K* into the machine. Runner and goods are thus kept separate until they come together between the presser roller *E* and the curing drum *C*. Care is taken when starting the machine to remove condensed water in the drum and prevent its accumulation while being heated.

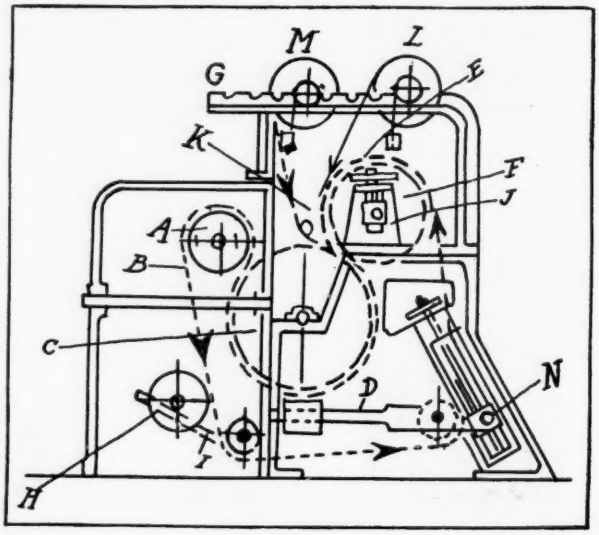
When *C* reaches the required temperature, the outer end of the runner is inserted, first followed by entrance of the calendered sheet; meanwhile the pressure roller *E* is kept raised. As soon as the runner and goods are properly and equally caught in the machine, pressure is applied against the hot drum by roller *E*.

The braking mechanism *N* is applied coincidently with the pressure strongly on the runner but moderately on the goods. Experience is the best guide as to the pressure necessary to be applied during the passage of the goods through the machine. It is understood that the necessary pressure depends on the plasticity of the uncured sheet and it is regulated accordingly. If the rubber is too soft, there is danger of its being torn as it is fed into the machine.

It is found advisable to store freshly calendered goods a day or two to increase the firmness of the rubber. If stored too long, however, the rubber becomes too hard to properly receive the impression of the pattern from the surface of the curing drum. When creases and dents appear in the goods as they enter the machine, it is proof that more pressure is needed. Stronger application of the brakes increases the pressure and removes these defects.

When the first end of the runner has made the first turn around the curing drum, it is attached to the conveyer belt until it reaches the roller *H*, around which it is wound a couple of times, after which the conveyer belt winds the remainder.

Either rubberized fabric or thin sheet rubber can be cured on this machine using a smooth plain surface. The advantages of the machine include the small space required compared to the usual long platen press, its relatively low cost, and simplicity of operation.



A NEW DRIVE *for* RUBBER MILL LINES

A. S. RUFSVOLD[1]

CONFRONTED with increased competition and declining commodity prices, various industries are forced to seek better manufacturing methods, improved machinery, higher operating efficiency, more economical use of floor space—anything which will help to reduce manufacturing costs. The rubber industry has recognized this condition and has introduced greatly improved manufacturing methods during the past few years, with the result that tires and other rubber goods of improved quality can now be purchased cheaper than ever before.

The most outstanding improvement in rubber mill power drives has been the use of the synchronous motor for mill lines. The many advantages of the synchronous motor are well known and need not be reviewed here. In recent years it has been common practice to couple large low speed synchronous motors directly to the line shafts, thus eliminating the usual reduction gears. In most cases this makes an ideal arrangement, but for drives below 400 h.p. the low speed synchronous motor is not generally economical because of higher first cost and lower operating efficiency as compared with a high speed motor and gear unit. When a gear unit

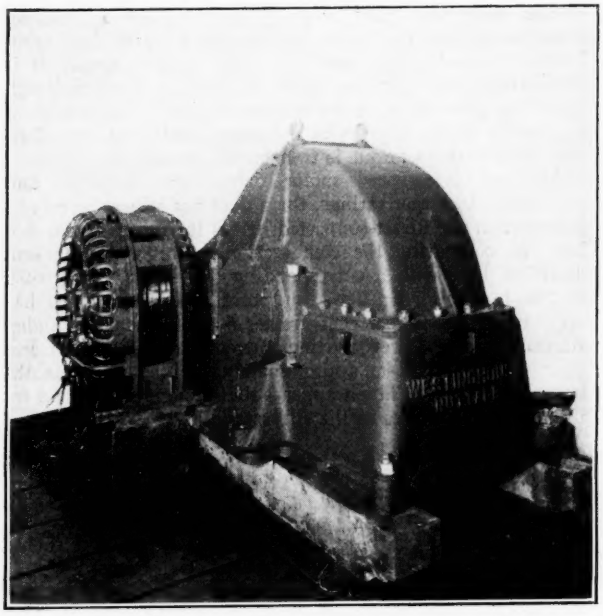


Fig. 1. Combination Gear Unit and Synchronous Motor with Overhung Rotor

is used, it is common practice to couple a standard motor of about 600 r.p.m. to the pinion shaft of the reduction unit.

A rather unique departure from the conventional gear unit drive was recently introduced for rubber mill lines. The drive, as illustrated in Figure 1, consists of a high speed synchronous motor combined with a gear unit in such a way as to give a very compact and highly efficient drive. Figure 2 is an installation view of such a combination unit driving three 60-inch mixing mills. The rotor of a standard 250 h.p., 720 r.p.m. synchronous motor is mounted directly on an extension of the pinion shaft of a mill type reduction gear unit delivering 90 r.p.m. on the low speed end. The overhung arrangement eliminates the usual motor bearings, shaft

Fig. 2. 250 H.P. Combination Unit Driving Three 60-Inch Mills

and flexible coupling, and results in a saving of approximately four feet in the overall length of the drive. The saving in floor space usually is very attractive, particularly in the case of existing plants where expansion is a problem due to limitations in floor space. The stator of the motor rests on a pair of rails grouted into the foundation, these rails being of such length as to permit shifting of the frame sufficiently to uncover the rotor for inspection or repairs. The stator can be easily removed for repairs by sliding it clear of the rotor.

To overhang a motor in this manner on the pinion shaft of a gear unit may, at first thought, seem questionable practice. Will not the overhung weight impose an excessive load on the pinion bearings and cause bearing failures? What about the deflection of the shaft? Can the air gap of the motor be held sufficiently accurate to prevent trouble? These and other questions may come to the mind of the skeptic. But when the problem is analyzed according to the fundamental laws of mechanics, it will be seen that it involves only a proper selection of materials and proportions to produce

[1]General Engineering Department, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

a drive equal in reliability to the ordinary coupled drive.

Of course the shaft must be sufficiently large in diameter to prevent appreciable deflection. The pinion bearings must also be oversize to carry the overhung load. When shaft and bearings of proper size are selected, all element of risk is removed; in fact, with fewer mechanical parts as compared to the coupled drive, there is less chance for trouble. As for the air gap, the ordinary synchronous motor has such a large gap that a variation of a few thousandths is of no consequence, and once the overhung motor is properly installed, there should be no variation in air gap.

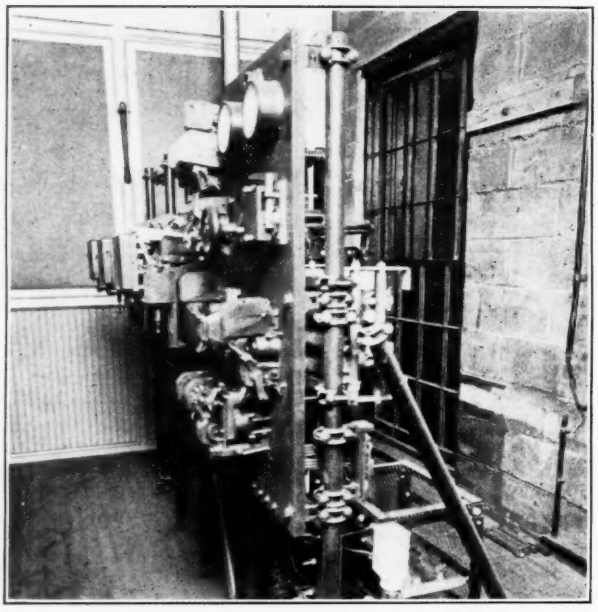


Fig. 3. Full Voltage Starting Dynamic Braking Control for 250 H.P. 4,000-Volt Synchronous Motor

The outstanding feature of the gear unit illustrated in Figure 1 is its high efficiency, made possible by the use of accurately cut helical gears held in perfect alinement by tapered roller bearings. The gears are of the single helical type, cut with a 7½ degree helix angle on precision hobbing machines. The tapered roller bearings easily take care of the thrust load, which amounts to only a small percentage of their rated thrust capacity. The pinion bearings are selected of such size that the radial load, including the overhung load, amounts to less than 20 per cent of the rated bearing capacity. Bearings selected on such a liberal basis will give practically indefinite life, even under the severe conditions encountered in rubber mill service.

The high speed shaft and pinion are forged integral of heat treated chrome nickel alloy steel. The gear is cut from a blank of 0.4-0.5 carbon steel. A special system of oil lubrication is used in which the oil is automatically maintained at the proper level permitting the revolving gear to pick up only sufficient oil for the necessary lubrication of the gears and bearings. Thus no power is wasted in unnecessarily churning up a large quantity of oil. After flowing through the bearings, the oil returns to settling chambers in the sides of the case where any sediment or dirt is removed from active circulation.

The motor shown in Figure 1 is rated at 250 h.p., 720 r.p.m., 80 per cent leading power factor. It has a starting torque of 1.6 times its normal full load torque, a pull-in torque of 1.0, and is capable of carrying peak loads of 2.5 times its rating. It is designed for full voltage starting so as to be capable of starting the mills when heavily loaded with rubber. These liberal torques eliminate delays in production, which would otherwise occur because of the motor pulling out of step on peak loads or failing to start after shutdown with the mills loaded. The starting current drawn by the motor is only 400 per cent of full load current at the instant of starting.

The control equipment, shown in Figure 3, is of the magnetic reversing full voltage starting type, with dynamic braking for emergency stops. The switching is done by means of electrically operated oil circuit breakers. Ordinary starting and stopping is accomplished by means of push buttons, but when a mill safety switch is tripped, the motor automatically is disconnected from the line and then connected across a suitable dynamic braking resistor, which causes it to be brought to a very quick stop by generator action. During dynamic braking the motor makes only three or four revolutions in decelerating from 720 r.p.m. to zero speed. It is interesting to note that this rapid deceleration is effected with no appreciable strain on the connected gears because most of the inertia of the drive is in the motor itself and, therefore, very little braking torque is transmitted through the shaft.

Although low speed motor drives are desirable and economical in larger ratings, there does not appear to be any justification for direct-connected drives in ratings below 400 h.p. In comparing the combination motor and gear unit described here with a corresponding low speed motor rated at 250 h.p., 90 r.p.m., we find that the geared drive has approximately 3½ per cent greater overall efficiency, higher starting torque, lower starting current, requires much less floor space, and costs approximately half as much as the low speed motor. Thus it appears that there is still a field for improved gear drives in the rubber industry.

Rubber Cement for Office Use

THE convenience and advantages of rubber cement as an adhesive for paper is not generally appreciated although its use for this purpose is extending. Its use outside of rubber works seems to have originated in certain branches of the graphic arts. In fact it is said that photo-engravers used it first to fasten on parts of photographs in what might be called photographic surgery. Next the air-brush artist used it to fasten down the masks for his drawing so that the ink spray would strike only selected parts of the photograph. Much of this work was done in advertising agencies, where copy writers and later editors, particularly of trade papers, realized the advantages of rubber cement as an adhesive for paper.

No fixed rule can be given for consistency and it should be regulated experimentally to meet special needs.

The advantages of rubber cement as an adhesive are that the pasted material lies perfectly flat and is therefore ideal for printers' dummies, etc., because if the cement is just right, the matter pasted will peel easily. Valuable prints can be cemented down and removed months afterwards without injury. The paper is never deformed nor stretched. In one editorial office about thirty cans a year are consumed. Any fairly stiff brush can be used, but a Japanese bristle brush gives excellent results. Use rubber cement once and you will never be without it for pasting, and, incidentally, you will help along an infant industry.

Rubber Shortage Is Inevitable Says Expert[1]

Lt.-Col. Kunhardt Foresees Demand Soon Passing Production, a Deficit of Half a Million Tons in 1935, and a Decided Price Rise

SCARCELY half a dozen years ago an eminent official with the best information obtainable by his government forecasted for the present time a real rubber shortage, stating specifically that the lean period when the lines of production and consumption would meet would be between 1928 and 1930. If the prediction went awry, it may be said in extenuation that meanwhile the trend has been altered by circumstances which even the most sagacious business students could scarcely have foreseen. Many internationally prominent crude rubber authorities then expressed views as to the future of this raw material that have since gone equally wide of the mark. Still predictions will continue to be made by the market-wise and most of them may be useful. Possibly one or more might prove remarkably true.

TABLE 1

MOVEMENTS IN WORLD'S STOCKS OF RAW RUBBER DURING 1929

		End Dec., 1928	End Sept., 1929	End Dec., 1929	Remarks
1.	United Kingdom	22,515	52,238	73,319	London and Liverpool.
2.	United States..	66,166	84,362	105,140	Rub. Mfrs. Assn., America.
3.	Europe	7,443	6,554	6,400	Antwerp, Amsterdam, and Hamburg.
4.	Afloat, United States	92,837	58,954	67,009	U. S. A. Dept. Commerce.
5.	Afloat, rest....	30,000	25,000	24,000	Rough estimate. Total in transit to, and between other countries.
6.	Brazil, wild....	4,438	4,465	3,300	Para and Manaos.
7.	Ceylon, Colombo	5,417	5,695	5,633	
8.	Ceylon, estates..	9,000	6,000	7,000	Rough estimate.
9.	Malaya, dealers.	45,265	50,284	50,649	Kedah omitted: small, and no Dec., 1928, figures available.
10.	Malaya, estates.	39,825	27,126	30,272	Adjustments made for Kedah, Johore, and "Rest" to make Dec. figures comparable with Sept.
	Totals	322,906	320,678	372,722	

There was a reduction in the world's stocks in the first nine months of 2,228 tons, but an increase of 49,816 tons during the entire year. As large quantities of undeclared or concealed stocks have also been exported, the net increase during the year has been about 30,000 tons.

The latest notable forecast is made by an observer of the crude rubber position whose opinions have long been highly regarded by leaders in the rubber plantation industry. He considers the situation largely from a new angle, his arguments being chiefly concerned with the probable depreciation of existing mature areas. He notes that the deterioration of old rubber plantings is already becoming a serious problem in the Dutch East Indies and other districts where restriction had not been enforced. He is confident that large tracts of rubber will steadily go out of existence and estimates that consumption can not fail soon to overtake production with the result of steady and considerable enhancement in rubber's price.

[1] Lt.-Col. J. C. G. Kunhardt, I. M. S., in "The Future of Rubber," published by the Rubber Shareholders' Section, Institution of the Rubber Industry, London, England.

Economic Price and World Stocks

No estimate of future production or consumption is considered satisfactory, he claims, unless due regard is paid to the price of crude rubber, the balancing factor between supply and demand. A normal economic price level is put at from 1 shilling 3 pence to 1 shilling 6 pence per pound. These figures are considered apart from their relation to present world stocks. The latter have been made up in no small part of the undisclosed restriction surplus carried over from November 1, 1928, which were to be distributed during the fore part of 1929. Instead of showing a decrease in 1929, such stocks increased almost 50,000 tons as shown in the accompanying Table 1. If allowance be made for 20,000 tons of undeclared stocks exported, the net increase in world stocks in 1929 would be scarcely 30,000 tons.

Consumption Rise 12½ Per Cent Yearly

The annual consumption increase for nine years, 1911 to 1920, is put at 18½ per cent. In the post-war period of 1920 to 1925 it declined to 12½ per cent, and the annual increase now continues at the latter figure. The subjoined table shows how such 12½ per cent increase has been worked out:

TABLE 2

WORLD CONSUMPTION OF RUBBER FOR NINE YEARS, 1921-1929

Year	Theoretical 12½% Increases in Consumption	Actual Shipments	Retained, or Net Imports
1921	320,000*	300,200	350,900
1922	360,000	399,700	403,100
1923	405,000	406,900	417,500
1924	455,000	427,700	420,400
1925	512,000	517,500	529,800
1926	576,000	619,900	625,700
1927	648,000	605,300	637,500
1928	729,000	648,000	600,900
1929	820,000†	860,000	910,000§
Total for 9 years	4,825,000‡	4,785,200	4,850,800‡

* The average absorption of three successive years 1920-1922 equals 320,000.

† The world absorption for the first eight months of 1929 was at the rate of 855,277 tons a year; so the figure of 820,000 tons for whole year is probably a conservative one.

‡ The increase in absorption during the past eight years has therefore averaged almost exactly 12½ per cent per annum.

§ The large increase in the quantity retained during 1929 does not necessarily imply an increase in world stocks. (See Table 1.) It merely indicates that large stocks had been transferred from producing to consuming countries after Restriction.

‡ Figures for Shipments are less liable to error than those for Retained. The chief discrepancy appears to be in the United States figures for net imports.

That the statistical position of rubber has greatly improved during the past seven years is shown, the author says, when the stocks of raw rubber in the chief producing and consuming countries are contrasted, as shown herewith:

	Stocks U.S.A.	Stocks U.K.	Singapore and Penang	Total Stocks	World Consumption	Ratio, Stocks to Consumption %
End Dec., 1921....	99,758	79,661	23,000	202,419	320,000	63.2
End Dec., 1922....	89,759	81,081	35,000	205,840	360,000	57.2
End Dec., 1929....	108,547	73,276	36,768	218,591	800,000	27.3

Allowing for the fact that the past year has been abnormal in many ways, Colonel Kunhardt assumes as a basis in forecasting consumption during the next few years that the world's normal consumptive capacity for 1929 did not exceed 760,000 tons. That a continued rise of one-eighth yearly is warranted is indicated by numerous favoring factors in the automobile and rubber industries, although he is content to estimate on an average rate of increase of but 10 per cent for the next three or four years. As to wear-and-tear consumption for 1931, 1932, 1933, it should, he believes, exceed 1,000,000 tons yearly; but even if it were but 5 per cent, that would put average consumption at 880,000 tons yearly.

Recoil from Over-Tapping

An abnormal factor influencing output in 1929 was over-tapping, chiefly among Malayan small-holders and much more extensive than generally realized, reaching 200,000 tons rather than the estimated 120,000 in most surveys. Forcing small holdings to yield an average of 470 pounds per acre, as compared to an average of 390 pounds on large, well-kept estates, will, if persisted in, result before long in subnormal crops, simply through bark exhaustion. But, to be conservative, this abnormal increase is put at but 50,000 tons (instead of 80,000 to 120,000 in others' estimates), and 27,000 tons are allowed for the so-called flush production soon following the removal of restriction. Thus 1929 production would be estimated as follows:

			Tons
Total world's shipments 1929 (Rickinson)			863,410
Less: Abnormal shipments	Export of stocks	30,000	107,000
	Flush production	27,000	
	Native over-tapping	50,000	
Total normal production—12 months			756,410
Average normal production—1 month			63,034

So that estimates of future production might be put on a more secure foundation, the author would figure the world's normal (maximum) productive capacity for 1929 not as 756,410 tons but as 800,000, practically balancing once more real wear-and-tear consumption, after ten years of over-production. Of the 800,000 tons, some 130,000 are classed as wild and other rubber.

Need Million Tons in 1932

Observing the declining ratio of world stocks to consumption, the considerable expansion of the manufacturing branch of the rubber industry, the lessened world stocks of made-up goods, such as tires, etc., and making allowance for increased use of reclaim and rubber fillers generally, the world, he says, must need fully 200,000 tons more of rubber in 1932, or a million for the year.

Will the planted areas be able to supply that amount and the steady increase per annum thereafter? It is doubted by Colonel Kunhardt, who submits a scale whereby, in allowing for the aging and unavoidable depreciation in planted areas and despite new plantings, bud-grafting (practiced on but 2 per cent of estate acreage), and other developments, it is shown that the normal productivity of estate rubber should decline by about 60,000 tons or from 670,000 tons in 1929 to under 610,000 tons yearly by 1935. Even if 723,000 acres in all of new rubber were planted in 1929 and 1930, the total estate output would still remain below 610,000 tons until 1937. Nor can the younger areas of this rubber reaching maturity compensate for the wastage in the older areas.

Full average production is estimated at 350 pounds per acre, but the output reaches a stage of half such production on the decline, in the case of native rubber in the twentieth year and of European rubber in the twenty-fifth year. In confirmation of this trend figures are given showing that in the past eight years in the Dutch East Indies, Burma, and India alone 103,139 acres have been abandoned. Exact data, it is regretted, is not yet available for Malaya and Ceylon.

Possibility of Additional Rubber

Discussing the possibility of producing more rubber to avert the threatened scarcity, the author believes that production of wild rubber might be substantially increased were a much higher and well-sustained price offered as an incentive, but that at best it could not be more than 30,000 to 40,000 tons more a year. Expecting little more in estate rubber, the author then turns to Dutch native rubber as the one "best bet" for an addition to the world supply. Allowing for slow growth and rapid depreciation, he doubts whether the output of such rubber will ever exceed 200,000 tons a year, possibly reaching 250,000 tons by 1936. In Table 3 the author summarizes the rubber outlook for the next five years.

TABLE 3

SCALE SUMMARIZING WORLD'S NORMAL PRODUCTIVE AND CONSUMPTIVE CAPACITIES DURING NEXT FIVE YEARS*

Year	Estate rubber normal productive capacity	Production: Dutch native and wild. Estimated at 10% annual increases	Total world's normal productive capacity	World's normal consumptive capacity at 10% annual increases	Difference: probable shortage in each year†
	Tons	Tons	Tons	Tons	Tons
1929	670,000	130,000	800,000	760,000	(+)40,000
1930	651,250	143,000	794,250	836,000	41,750
1931	627,969	157,300	785,269	920,000	134,731
1932	605,938	173,030	778,968	1,012,000	233,032
1933	608,282	190,333	798,615	1,113,000	314,385
1934	622,500	209,366	831,866	1,224,000	392,134
1935	609,844	230,302	840,146	1,346,000	505,854

* This scale is based upon the (assumed) normal or economic price of rubber being between 1 shilling 3 pence and 1 shilling 6 pence per pound.
† If the output of Dutch native rubber should increase up 300,000 tons by 1935, then the shortage in that year would be only 400,000 tons.

New Paper-Makers' Roll

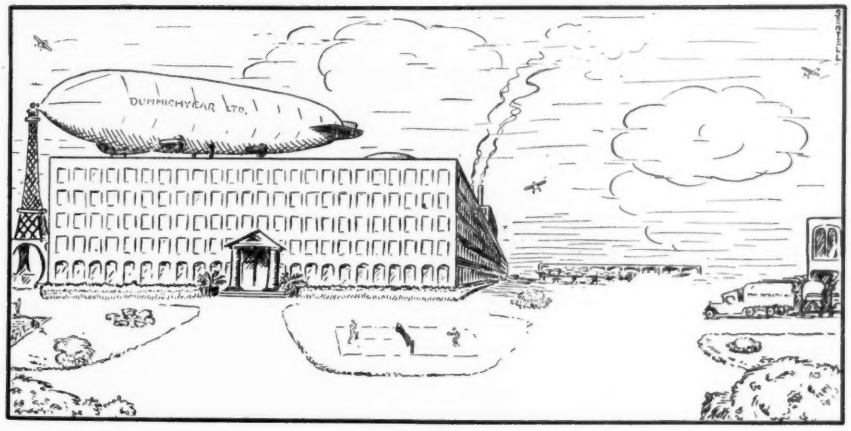
A new development in paper manufacture is the use of a solid wooden roll, or a light metal roll, covered with a relatively thin sleeve of acid-resisting, vulcanized rubber. Plies of rubberized tape are wound on the ends of the roll, to which a thin layer of rubber cement is applied to hold the sleeve in position. To deal with water ponding on belts or tables, ridges may be provided in the rubber sleeve, thus spreading out the felt, preventing it from gathering, and at the same time helping to keep the rubber in position.

Milling Lessens Heating Need

In waterproofing of leather use has long been made of rubber and paraffin wax well heated to make either, or both in combination, relatively fluid. In a new process a better result is said to be obtained by softening moderately by heat a mixture of rubber and paraffin and subjecting the mixture to mechanical treatment in a colloid mill to lower its viscosity and increase its permeability. It is said that such treatment considerably enhances both conditions without the danger of injuring the properties of the rubber and such as results from the heat of 150° F. often employed.

The Dunmichyear Rubberglass Co., Ltd.

New Factory at Avonrich-on-Sea



A Flight of Imagination? Perhaps!

By "SHELL GATHERER"

AT THE invitation of the Dunmichyear Rubberglass Co., our representative attended the opening ceremony on February 28, 2930. The ceremony was performed by the Prime Minister of Good Will, assisted by the heads of the only remaining Government Departments, the Ministers of Industry and of Peace. It will be remembered that the foundation stone of the new factory was laid by the President of Avonrich early last year.

The new plant is situated three miles from the sea on the outskirts of Avonrich. It is reached by a fine avenue of the latest rubberglass roadway, on either side of which grow beautiful copper beach and poplar trees. The factory itself covers about 500 acres, much of which is given up to gardens recalling memories of the world's most famous botanical gardens. The large building, covering a floor space of some 70 acres, is of five floors, and may be compared to a gigantic greenhouse, with a multitude of creepers, rambler roses, and other climbing plants covering the structural work. The stories are each 30 feet high and allow more than sufficient daylight to reach all parts. The center of the building is a covered winter garden of one story. In the grounds are also a gymnasium, swimming pool, and sports pavillion. The flying ground is on the north side and has accommodation for over a thousand light airplanes, together with a garage for three thousand cars. It was noticed that there was no accommodation for cycles or motorcycles.

Raw material and other goods arrive by air or motor transport at the rear of the factory building. Bodies or containers are detached and elevated to the top floor, where they are emptied immediately and lowered to the ground floor to be refilled.

Our representative witnessed the arrival of a giant Royceavrosop from the plantations with a cargo of over one hundred and twenty tons of latex; the container was elevated, emptied, and replaced by one packed with Dunmichyear products, so that the machine was on its return journey with a relief crew in less than twenty minutes of arrival, the inward crew having adjourned to the swimming pool and then to enjoy the garden fete that was being held in connection with the opening ceremony.

Motor trucks, carrying up to one hundred tons arrived and departed without stopping their engines. The arrangement is clever, whereby a truck passes down an avenue, stops a few seconds while the container is removed, then passes to finished stores, and picks up a fresh load, and so on its journey. At the company's depots and ports are similar arrangements that are employed for the rapid handling of transport.

Inside the factory, the new method of tire construction is in full swing, over a million tires being produced per month. The layout of the factory is ideal, all products moving towards the ground floor for packing and dispatch. Owing to the rapidity and ease of manufacture, very little space is reserved for finished stocks. The new method of production is the result of the continued efforts of the chemists of the rubber industry to produce a very strong flexible compound, and of the chemists of the glass industry to produce a flexible glass, their united efforts resulting in the production of "Rubberglass," a naturally transparent material, at times colored red or black to suit some of the foreign markets for tires and other rubber goods.

Only seven ingredients are used: namely, latex, silica, zinc preparation, black, clay, special compound, and waste products. These arrive on the roof in containers and are emptied immediately into large storage bins on the top floor. All consignments are treated as one and kept in motion so as to mix thoroughly the various lots. The ingredients pass through sieves and driers into one or more common chutes, the speed of admission being regulated to give the correct proportions to the main compounds, of which there are two only. The raw compound is fed continually through the main chutes into a reservoir whence it is issued by pipe line throughout the factory to the molds. The compound is fused in the molds and cooled rapidly to form the finished article. In the case of tires, the two compounds are used, though it is anticipated that one compound will be sufficient in the near future.

The glass process is extremely simple. The fused compound is allowed to cool slightly and is then fed through a calender which is kept below freezing point. The calendered material returns to normal temperature by passing over heated drums, before being batched up and packed for delivery.

We were informed that the Entertainments Corporation had made arrangements to project and broadcast a tour through the new factory about the beginning of the next month. No doubt our readers will look forward with great interest to this broadcast. . . .

Intimate Confessions of a HOT WATER BOTTLE

My birth, early life, character, and enemies

A MODERN creature am I; and since everybody nowadays pens memoirs on his typewriter, why shouldn't I? Many of you may be surprised at what I write; then again, maybe not. All I can say is, lend me your eyes.

I guess I'd better begin at the beginning. (That's customary, isn't it? You know, I haven't much experience—as an author; so if I make any bad breaks, charge it to ignorance.) Well, here's the low-down on this hot water bottle.

You doubtless are aware (good tone, yes?) that the essence of my being is rubber. Rubber, dear readers, is a vegetable obtained from the latex or milk of a tropical tree called Hevea. Being a vegetable it will die. Thus the manufacturer's big idea is to delay its death as long as possible and at the same time increase and stabilize its remarkable physical qualities: elasticity, impermeability to water, and resiliency.

The durability of a rubber article and the degree to which it possesses these qualities depends wholly upon the skill and honesty of the manufacturer. Pure rubber, as such, isn't much use. In general, it must be compounded with other ingredients to develop and stabilize the qualities desired in the article for which it is intended. The compounding ingredients comprise vulcanizing agents, coloring matter, and fillers. Vulcanizing agents are necessary because vulcanization (treatment with sulphur) stabilizes the elasticity of the rubber. Coloring agents often increase stability. They are of all classes; some increase the quality of the rubber, while others are a deteriorant. Fillers are frequently used to give body and substance to the rubber compound. Unfortunately they are sometimes used as adulterants. Fillers of low quality used in excess are not discernible by the buyer until the article has been in use for a few months.

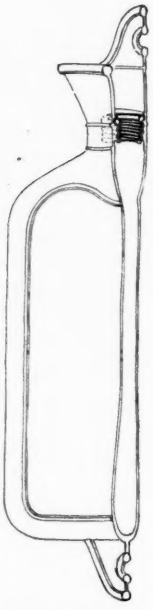
(You're quite right. I didn't think up all those fifty-cent words by myself; I'm only repeating what I heard.)

Right here I simply must tell you about my enemies. Have I any? Now, really, haven't we all? You'd be surprised, kind audience, but my fiercest foe is—the safety pin. It is amazing how many honest people, when trying to pin a flannel cover around me, will puncture me and claim that the leak is due to my defective manufacture.

My next worst enemy is oil or grease. In making rubber gloves rubber is dissolved in naphtha. If naphtha will completely dissolve rubber into a sticky liquid (cement), you can readily appreciate what happens to rubber goods when we are subjected to prolonged contact with oil and grease.

Excessive heat, which is no friend of mine either, causes overvulcanization and rapid deterioration. Even the heat of strong direct sunlight shining through glass when I am displayed in a window will make me deteriorate. Many rubber goods, furthermore, are injured by contact with stoves or radiators.

Like any other woman, I can't stand neglect. It doesn't hurt rubber goods to use us. A fountain syringe used daily and treated carefully is guaranteed for a year and will ordinarily last from two to five years. In a museum where I come from they have a water bottle that was used daily for fourteen years. On the other hand, take the same fountain syringe, use it once every three months, throw it in a drawer without drying, pile a few shoes and garments on top of it, and you are lucky if it lasts a year.



Cross - Section Showing Solid-Neck Type of Bottle with Brass Collar Molded in Place

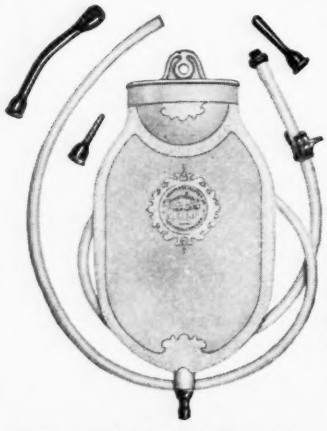
Don't fill me with boiling water. Have it just under boiling temperature. Fill me about two-thirds full and before inserting my stopple, expel all air by squeezing me gently until the water level reaches the top. After using, drain and dry me, put me away in a cool, dry place, and don't pile things on top of me. Please!

Every one who has sold rubber goods is familiar with a yellowish white that sometimes appears on our outsides, especially on cheap goods. The manufacturer calls this "bloom." It is simply a surface deposit of the sulphur used in vulcanization. It does not indicate poor quality but may mean hurried work. It can be removed by sponging us with equal parts of alcohol and glycerine. If the manufacturer, however, ages us for thirty days after manufacture before washing and boxing us, the bloom will seldom develop.

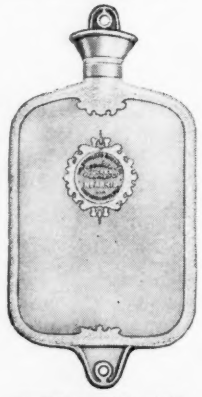
As I understand it isn't polite to talk so much about oneself, I'll let my good friend, Gale Shedd, Jr., manager of sales promotion, The Seamless Rubber Co., New Haven, Conn., tell you how I am made. He sure knows his hot water bottles; so, hark, ye, to his words of wisdom:

"The first step is conducted on the mixing mills, huge, steamheated parallel steel rolls, whose function is to break down the nerve of the pure rubber, which is exceedingly tough. When this has been done, the various fillers, coloring material,

SR92 Red Nearkid Combination Water Bottle and Fountain Syringe and Equipment: 5 Feet of Tubing, Combination Stopple Shut Off, Infant and Rectal Screw Pipes, Balloon Spray Vaginal Pipe, and Chain-Secured Stopple



SR91 Red Nearkid Fountain Syringe



SR90 Red Nearkid Water Bottle

SR5 Pink, SR6 Blue, Mother Hubbard Juvenile Water Bottle

Nearkid Hot Water Bottle in Pastel Shades

has spread to fill every nook and cranny of the mold and adopt its design. At the same time it has been vulcanized.

"The core is removed from the mold, covered by the water bottle in practically its finished condition. An opening is intentionally left at the bottom through which the core is removed. This opening is now closed seamlessly by a second vulcanization. The result is a water bottle that has positively no seams or joins. In the ordinary type of bottle the core is removed from the inside by stretching the neck, and the threaded brass collar that receives the stopple is contained in a soft rubber plug held in place by wire and cement. You will readily appreciate that this is an inherently weak spot and that the solid-neck type of bottle gives positive insurance against developing leaks at this point.

"Then the bottle's edges are trimmed by deft-fingered workers with special scissors.

"The next step is to test the bottles for leaks, by inflating them under water with compressed air. Even the tiniest bubble indicates a leak which may be due to foreign matter that may have found its way into the rubber compound. This test is insurance against future trouble. Most of the bottles pass the test successfully and are sent to the aging room. Here they are hung in a cool, dark place for thirty days to allow the bloom to develop.

"After aging, the bottles are washed with soap and warm water in regular laundry machines. They are then varnished, boxed, and are ready to ship."

Good work, Gale, even I couldn't have explained it so well.

As I look around this world of ours, I sadly reflect that the past few years have seen a deplorable tendency towards cheaper goods. The consuming public is not responsible. But retailers and manufacturers must share the blame. The retailers are at fault in their intense, but natural, desire continually to offer prices lower than their competitors. The manufacturers have been to blame in their earnest efforts to make cheaper and cheaper goods to take away from their competitors the business of these buyers.

In this struggle everybody but the public has overlooked the importance of quality, and both the manufacturer and the retailer have slighted the importance of larger unit sales and a reasonably long gross profit. The average woman who walks into a store to buy a water bottle does not come in because she knows I am on sale for 79 cents. She comes in because she wants me and she usually wants a good me and expects to pay $2 or more. If, however, by advertising, display, or the line of the clerk, a 79 cents water bottle is forced on her, she will accept it in all but rare instances. Who wouldn't? But who's the loser?

Another factor has an important effect on the satisfaction of the customer: the way in which I am packed. Any salesman will admit the great importance of this. With the ever-increasing demand of merchants for lower priced rubber goods, unfortunately some manufacturers meet this by skimping their packing as well as their product. Now I believe that if a manufacturer has the courage to resist the temptation to skimp his product to meet a price, he will also have too much pride to send out a fine product in an inferior package. And generally a cheap package houses a cheap product. A girl's appearance can make or break her reputation, you know.

I guess these pictures of me and my friends are self-explanatory. But I particularly want you to notice the cross-section in the upper right-hand corner of my first page. That reveals my leakproof solid neck that Gale Shedd told you about so well.

I'm sorry these illustrations aren't colored; then they could show my appeal. As every modern woman does, I realize the wonders color can accomplish and I went in for it strong. Now you can get me in red, blue, orchid, wisteria, rose, and green. I do think that Mother Hubbard juvenile of me, with eight nursery pictures, in baby pink or dainty blue is awfully cute. Nor am I at all bad-looking in the red or blue one-pint face botle. The manufacturer also made me in red, miniature, half-ounce size for gifts, toys, and advertising novelties. Sometimes I have a smooth skin you love to touch, with just a delicate line or two and a trade mark, or I may have a dainty moire, quaintly mottled, or fancy-design surface.

You know my various uses as well as I. So now, dear reader, not wishing to bore you any further, I say so long—until we meet again.

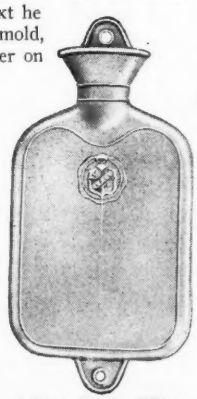
and vulcanizing agents are added and the whole milled together until a perfectly compounded and homogeneous mass is obtained.

"The compounded rubber, removed from these mills in the form of slabs, next is passed through another rolling mill consisting of three rolls which roll it out into a thin continuous sheet. This is delivered to a cutting room where it is cut in squares or oblongs the right size to make one side of a water bottle, and in such squares it is delivered to the molding department.

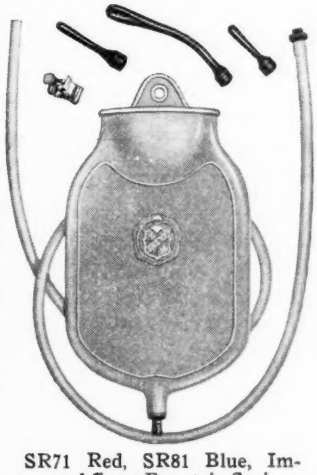
"Each molder operates one side of a bank of five hydraulic presses. These operate at 285° and a pressure of 600 pounds per square inch. On each bank of five presses another molder operates the other side.

"The molds weighing about 75 pounds apiece are hand-carved of solid steel, and whatever design is to appear on the finished water bottle, must first be engraved in the steel of the molds, which consist of three pieces: top, bottom, and core. The core has a removable head which admits molding the threaded brass collar that will later receive the stopple, right into the neck of the bottle as an integral part. The operator first puts the brass collar on the core. Next he puts rubber in the bottom half of the mold, puts the core in place, adds more rubber on the upper part of the core, and covers the whole with the top half of the mold. The entire mold is then inserted into the press and subjected to the high temperature and pressure for twelve minutes, during which time the operator is able to attend to his other four presses. At the end of twelve minutes the rubber

SR0 Red, SR10 Blue, Crest Face Bottle



SR70 Red, SR80 Blue, Crest Hot Water Bottle



SR71 Red, SR81 Blue, Improved Crest Fountain Syringe and Equipment

SR72 Red, SR82 Blue, Combination Crest Water Bottle and Fountain Syringe with Equipment

EDITORIALS

Still Blamed for Cheap Rubber

SOME British critics still prate about "the machinations of American rubber buyers" being the chief cause of prices for crude scraping bottom so long, and they regard as very unfriendly the Ford, Firestone, guayule, and other American rubber culture enterprises. As well might Americans accuse British buyers of conspiring to depress the price of cotton. More likely is it that no concerted effort has been made to corral raw materials cheaply for either Akron or Lancashire. Rubber and cotton have been sagging through excess production and lessened demand. American rubber buyers, however, are fair enough to admit that a better price is warranted by production cost, but, like buyers the world over, they will continue to purchase as cheaply as possible, just as they will always encourage compatriotic efforts to supplement the present supply.

Nor are all Americans eager to keep rubber prices low. Many important interests would be pleased to have crude selling higher. Dealers in scrap and makers of reclaim would hardly regard a rise in crude prices as a calamity, nor would many makers of compounding materials that reduce volume cost consider it an unmixed evil were raw rubber to sell again well above the ruling range.

* * *

Future Rubber Factories in Tropics

AN IDEAL industrial set-up is a factory at the source of raw material and in a region where power is cheap and abundant, labor is low-cost and plentiful, and shipping ports close at hand. All such desiderata may in the not-remote future be realized in the rubber growing sections of the Far East, should the Claude-Boucherot process of extracting energy from tropical sea water prove its practicality.

As Professor Georges Claude, noted for his neon light and other inventions, says: "The utilization of such inexhaustible power can change the whole character of equatorial communities now industrially dormant, operating factories, railways, lighting plants, etc.; and it is no greater engineering feat than laying an ocean cable."

At Matanzas Bay, Cuba, M. Claude plans to lower into the Gulf Stream 1,700 yards of tubing with which to operate his primary power station. By subjecting the warm water near the surface to vacuum, he plans to produce steam to revolve turbines, the steam in turn to be condensed with cold water from the depths, thus renewing the vacuum and causing the water to boil continuously. The Academy of Sciences at Paris declares the plan practical, and Cuban engineers on the ground are elated at the prospects.

While it may be a long time before the Far East through such means begins to challenge our great rubber manufacturing centers, odd things will continue to happen in science and industry. Even this possible development in sea power may be expected by some pact-making nations to help them offset any setback in sea power in another sense. However, American ingenuity can be depended upon to avert any danger to our interests, and tariffs can be adjusted to counteract menacing competition.

* * *

Leveling Employment Extremes

A GOAL toward which all worthy employers aspire is the leveling of the hills and hollows of employment. Nothing is so distasteful to them as the laying off of faithful and often needy workers when work gets slack, unless it be the taking on of green hands when work gets brisk. They realize, too, how every addition to the general unemployment can hasten the coming of hard times, and they concede that reason is in the economists' contention that the wisest way of preventing widespread idleness with its attendant dangers is to stabilize employment. Yet willingly as they would so regularize employment that it would know neither peaks nor depths, they balk at applying such labor-control lest it prove too inelastic for their business.

But can any industry be so planned and managed as to production, sales, orders, and diversification of product that it can keep a fixed number of men at work continuously? Frances Perkins, Commissioner of the New York State Department of Labor, says that it can be done and that such prevention of wide swings in employment has eliminated much waste and yielded much profit, all because: machines and equipment are thus kept working, and buildings are steadily used and made to earn their cost and upkeep; that overhead and supervision are also kept productively engaged; and that lack of fear of unemployment begets in workmen a heartier cooperative spirit and a willingness to experiment with labor-saving machines and more efficient productive methods.

* * *

PRESIDENT TEW, OF THE B. F. GOODRICH CO., SAID much in little when he declared that the manufacture and sale of entirely new rubber products involving the use of radically new compounds will effect a saving to the country of many millions in the next few years; that important uses now scarcely thought of will be found for rubber products in household and industrial fields; and that the expansion of the rubber industry in the next decade will outstrip greatly its extension in the past ten years. Although the industry has already rendered prodigious service, it is destined for far greater achievements. Trying to discount its possibilities would be like "going short" on national prosperity.

What the Rubber Chemists Are Doing

Physical Testing of Rubber

DURING his recently completed tour of industrial cities in Europe, A. A. Somerville addressed a number of scientific and engineering societies in England, France, and Germany on the new physical methods of testing rubber developed in the laboratory of the R. T. Vanderbilt Co. Seven papers were comprised in the series of addresses. The following are the abstracts which, grouped under a general title, outline the scope of the research as presented by the author.

Standardization of Old Test Methods. The necessity for standardization of test methods is first shown by a citation of extremely variable results obtained by four different laboratories on exactly the same compound, and a brief history is given of what has been accomplished to date by the rubber industry in America in the direction of such standardization.

Interpretation of Old Time Tests. The author shows that the so-called old time tests of tensile strength and friction pull determinations are frequently difficult to correlate with the actual performance of a rubber article in service, and then describes various more modern tests which have been designed with the hope of ultimately securing greater correlation with actual service.

Stress-Strains at Low Elongations. For several years stress-strain figures have been obtainable at relatively high elongations, that is 200 to 500 per cent, but the methods of test in use did not permit the determination of stresses at elongations as low as 25 to 50 per cent. A method involving a new form of test piece is described, and results are given, also a brief comparison of results obtained with the ordinary dumbbell and ring shaped test pieces. Various factors affecting the position of stress-strain curves are considered, such as variation in cure, speed of testing machine, effect of mill grain, and effect of temperature. This discussion is taken from a previous paper not yet published.

Fatigue Tests. Many rubber goods in service are repeatedly stretched or fatigued. Accordingly what is known in America as the DeMattia fatigue testing machine is described, and results of extensive tests are given. By this machine dumbbell test pieces are rapidly stretched to any desired elongation and released. Various factors are considered such as degree of extension of test piece, temperature of test, time of cure, temperature of cure, length of fatigue, and presence or absence of antioxidant.

Flex Cracking. Rubber goods such as tire treads frequently develop mechanical cracking due to flexing as contrasted with cracking of sidewalls due to sunshine or ozonized air. Flex cracking tests are described as made on the DeMattia testing machine whereby a solid rectangular block is used for a test piece, and the degree of cracking noted after a certain flexing period. The factors here considered are effect of antioxidant and temperature of the test.

Compression and Cutting Resistance. Compression and cutting resistance tests are described using the Scott compression machine, which was designed for testing the resistance to compression of insulated wire. A special plunger and wedge were designed as adaptations to this machine so that it can be used for ordinary compounding research work. Results on insulated wire and without antioxidant are first shown and then extensive tests on 0.1-inch rubber slabs are given with consideration of the following factors: gage of test piece, wet versus dry test piece, time of cure, various loadings of fillers, equal volumes of different fillers, addition of mineral rubber, addition of antioxidant, and temperature of test.

Aging at Various Elongations. The aging of rubber goods in heat, oxygen, sunlight, and ozonized air is affected by the amount that the rubber article is stretched. Tire inner tubes are now being subjected to heat aging when stretched 25 to 50 per cent. Stretch is an important factor in sunlight aging. A description of some of these tests is given. The data on effect of elongation during aging in oven, bomb, ozonized air, and sunlight is taken from a previous paper on the subject of aging.

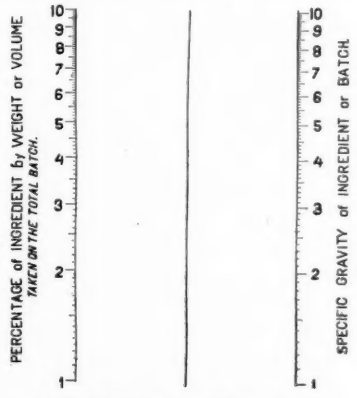
Weight-Volume Percentage Conversion Chart

H. A. Braendle
Binney & Smith Co., New York, N. Y.

THE nomographic chart represents a form of mechanical solution of certain types of algebraic equations, which, perhaps, has not found the application among rubber chemists which its simplicity deserves. For example, any algebraic equation involving any number of variables which is expressible in the form,

$$a + b + c + \ldots\ldots\ldots = \text{constant}$$

where each term involves only one variable, in no matter how complicated a form, may be solved quickly by the construction of the proper nomograph.[1]



Weight-Volume Nomograph

The nomographic chart here shown will be found convenient for ascertaining without calculation, the volume percentages of compounding ingredients in a rubber mixing corresponding to their weight percentages. It is quite essential to know the volume percentages of the bulkier items of a rubber mixing such as reclaims, reenforcing ingredients, diluent powders, mineral rubber corresponding to their respective weight percentages.

The accompanying chart is designed to solve graphically the weight-volume relations in such problems. The scale graduations are logarithmic and the chart is designed to solve graphically the equation: Ingredient volume percentage $\times$ ingredient specific gravity = ingredient weight percentage $\times$ specific gravity of compound or, in condensed form

$$v \times g = w\,G \text{ or } v = \frac{w\,G}{g}$$

Specific problems can be solved readily and with practical accuracy according to the following example:

Given the percentage by weight, w, of an ingredient in a compound of known specific gravty, G, find the percentage by volume, v, corresponding in that compound. The solution by the chart is thus: With a ruler connect by a straight line the given weight percentage found on the left-hand scale with the known gravity of the compound found on the right-hand scale and mark the point where this line crosses the ungraduated center or "turning" scale.

Next place the rule at the graduation on the right-hand scale corresponding with the known specific gravity, g, of the ingredient and join this point with that already marked on the ungraduated center

[1] For details of the theory and application of nomographic charts see: "The Construction of Alignment Charts," G. W. Swett, John Wiley & Sons, New York, N. Y.; "A First Course in Nomography," S. Brodetsky, G. Bell & Sons, London, England; "Graphical and Mechanical Computation," Joseph Lipka, John Wiley & Sons, New York, N. Y.

scale. The extension of this line will cut the left-hand scale at a graduation reading the unknown volume percentage desired corresponding with the given weight of the ingredient.

In exactly similar way one can read on the left-hand scale weight percentages corresponding to given volumes of an ingredient of known specific gravity in a compound of known gravity.

Some Observations on Carbon Black[1]

C. M. Carson and L. B. Sebrell
Goodyear Tire & Rubber Co., Akron, O.

THE peculiarities of this interesting, unpleasant, but wholly necessary material have been thoroughly studied by its producers and consumers. Its related substances, charcoal and lampblack, have been the subject of theoretical research for many years. In the course of some work recently carried out in the writers' laboratories some interesting observations have been made. These have not been studied exhaustively, nor can definite conclusions applicable to all types and classes of blacks be drawn, but the results seemed to be of sufficient importance to record.

It has been noticed for several years, in compounding carbon blacks, that different rates of cure of the rubber stock are obtained with different blacks. The general opinion is that these differences are caused by adsorption of sulphur and accelerator by the blacks, and that a determination of the adsorption value would show the approximate action of a black on the cure of a rubber mix.

Leblanc, Kroeger, and Kloz[5] concluded that it was not possible to predict the properties of a rubber-black mix from a study of the crude black. Spear and Moore[6] decided that adsorptive capacity and other tests on the black were not sure indications of the quality of a stock. Recently Goodwin and Park[3] have stated that "adsorption is the one property of carbon blacks that exerts the profoundest influence upon the character of a rubber mix," while Beaver and Keller[2] state that "no correlation could be found between iodine adsorption and the effect of these blacks on the rate of cure." The results of the present work are in agreement with the opinion of Goodwin and Park.

In regard to the effect of heat on blacks, Johnson[4] has found that blacks having a low percentage of volatile material at 900-1000° C. are of higher quality in a rubber mix than those having high volatile matter. Likewise, Beaver and Keller have found that blacks of low oxygen content give a fast curing stock.

The writers are not aware of any published work backed by experimental data on the relation of dispersion of carbon blacks to any properties of the rubber with which it is mixed. However, an article of Stamberger[7] on the rate of settling and dispersion of various pigments (including carbon black) in dilute rubber cements led to an investigation along similar lines. It is the purpose of this paper to show, among other things, that there is a remarkable relationship between degree of dispersion and modulus, but that rate of settling is seldom indicative of differences in physical properties of the cured stock.

The union of black and rubber is a powerful force as is shown by the fact that high-quality blacks cannot be totally centrifuged from a rubber cement even by further dilution. This is true of no other pigment.

When a black is milled into rubber, the union is still more difficult to break by centrifuging.

The accuracy of the test is remarkable for the quality of the black may be determined by 1 to 5 per cent of the weight of sample taken, and a black is seldom found that cannot be classified as to modulus in the cured stock by this method.

Summary

Different carbon blacks have certain definite effects upon the vulcanized rubber stocks with which they are mixed. The experiments described herein may be grouped under four main heads: (1) adsorption, (2) effect of heat, (3) reaction with sulphur and zinc oxide, and (4) dispersion of rate settling.

The adsorptive capacity of the black is a measure of the rate of cure of the rubber mix, low-adsorptive blacks giving a faster curing stock than high-adsorptive blacks. An indication of the stiffening action of a carbon black may be secured by measuring the amount of carbon dispersed in a thin rubber cement which cannot be centrifuged out in a given time. The effect of temperatures from 500° to 1200° C. on carbon blacks is to render them highly adsorptive and also to give a rubber mix which cures faster and has a higher modulus. The reaction of carbon blacks with sulphur and zinc oxide in boiling xylene liberates a substance having accelerating properties in a pure gum mix.

[1] Presented before the Division of Rubber Chemistry at the 77th Meeting of the A. C. S., Columbus, O., Apr. 29 to May 3, 1929. *Ind. Eng. Chem.*, Oct., 1929, 911-14.
[2] Beaver and Keller, *Ind. Eng. Chem.*, 20, 817 (1928).
[3] Goodwin and Park, *Ind. Eng. Chem.*, 20, 706 (1928).
[4] Johnson, *Ibid.*, 20, 904 (1928).
[5] Leblanc, Kroeger, and Kloz, *Kolloidchem. Beihefte*, 20, 356 (1925); *C. A.*, 19, 3398 (1925).
[6] Spear and Moore, *Ind. Eng. Chem.*, 18, 418 (1926).
[7] Stamberger, *Kolloid-Z.*, 42, 295 (1927).

Stressed Vulcanized Rubber[1]

Roscoe H. Gerke
United States Rubber Co.

THE thermal behavior of rubber when stretched has been the subject of discussion for many years. In a summary of the early work, Whitby[2] stated that Gough[3] as long ago as 1805 recognized that stretching increased the temperature of rubber and that a strip of rubber, if extended vertically by means of a weight attached to the lower end, became shorter when heated and longer when cooled. Later Joule[4] independently stated that the stretching of rubber at sufficient elongations increased its temperature, but that at lower elongations the temperature decreased. Lord Kelvin predicted, on theoretical grounds, that stretched rubber would contract on being heated. Joule confirmed this prediction experimentally.

The present author finds the essential difference between the customary and the equilibrium stress-strain curve is that time or frictional effects enter when the rubber is stretched at a given velocity. In the equilibrium stress-strain curve these effects are eliminated.

The absorption of shocks and vibrations by rubber in a practical sense depends upon the fact that the stress-strain curve shows hysteresis under these conditions. Thus, oscillations in the rubber are damped. Consequently the second law of thermodynamics cannot be applied to such irreversible actions.

The potential energy of stretched rubber is the tendency to do work and increases with the stretch. On the other hand, the energy content decreases with the stretch for when rubber retracts without doing work, the temperature decreases. This is all the more interesting since up to 600 per cent elongation the equilibrium stress-strain curves are identical for different cures, in contrast with the usual stress-strain curves which show the rubber to be stiffer with higher cures. This is additional evidence that vulcanization does not greatly affect the elastic properties. The important change in rubber caused by vulcanization is a greater resistance to the plastic flow or permanent set.

[1] "Thermodynamics of Stressed Vulcanized Rubber." Presented before the meeting of the Division of Rubber Chemistry, Atlantic City, N. J., Sept. 26 to 28, 1929. *Ind. Eng. Chem.*, Jan., 1930, pp. 73-77.
[2] Whitby, "Plantation Rubber and the Testing of Rubber," p. 453, Longmans, 1920.
[3] Gough, *Mem. Proc. Manchester Lit. Phil. Soc.*, 1, 288 (1805); *Nicholson's J.*, 13, 305 (1806).
[4] Joule, Joule's Scientific Papers, Vol. I, p. 413.

Rate of Cure of Reclaimed Rubber—II[1]

F. L. Kilbourn, Jr., and G. W. Miller
Firestone Tire & Rubber Co., Akron, O.

THAT the rapid rate of cure of rubber stocks containing reclaimed rubber is due only in part to the alkali used in the reclaiming process and that some other factor is also responsible has been shown by experiments previously reported[2]. In continuing the investigation the five logically possible causes of the rapid rate of cure which were listed by Shepard, Palmer, and Miller, the first investigators, were considered. These are: (1) residual alkali in the reclaim; (2) unchanged accelerator in the reclaim; (3) depolymerization by the action of heat and mastication; (4) "head start" of the reclaim with respect to chemical state of cure; (5) oxidation products acting as curing agents. The first, third, and fourth possible causes only were considered in the previous report.

Martin[3] has pointed out that small amounts of alkali accelerate and large amounts of either acid or alkali retard the vulcanization of rubber. Twiss[4] has reason for believing that in using caustic as an accelerator of vulcanization a carrier medium of such a nature that it disperses in the rubber on the mill must be used. Such a medium, glycerol for example, facilitates dispersion of the caustic in the rubber.

Summary and Conclusions

Residual alkali in reclaim is chiefly responsible for the faster rate of cure of stocks containing reclaimed rubber as compared with those containing new rubber only. Reclaim prepared in water can be made to cure as fast as alkali reclaim by the addition of sodium hydroxide in glycerol as a carrier to the extent that this is present in the alkali reclaim. The determination of residual alkali requires a very long extraction, in this case approximately 60 days.

Of five possible theories accounting for the rapid rate of cure of reclaim, only that of residual alkali is tenable. There still remains in certain cases, however, a difference in rate of cure between stocks containing new rubber and those containing water-cooked reclaim for which no explanation has been found.

Sodium hydroxide of itself is not deleterious to rubber compounds, for, in addition to its value as an accelerator in certain cases, it tends to improve physical properties and aging resistance, as judged by the Geer oven test.

[1] *Ind. Eng. Chem.*, Jan., 1930, 69-73.
[2] Shepard, Palmer, and Miller, *Ibid.*, 20, 143 (1928).
[3] Martin, *J. Soc. Chem. Ind.*, 34, 725 (1915).
[4] Twiss, British Patent 125,696 (1918).

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Modern Methods of Producing Rubberized Fabrics. (Conclusion). E. Wurm, *Kautschuk*, May, 1930, pp. 94-96.

Exudations of Latex in Hevea Buddings. W. Bobilioff, *Arch. Rubbercultuur*, May, 1930, pp. 215-21. Illustrated. English summary, p. 222.

Inquiry into Inner Properties of Estate Rubber in Java and South Sumatra. R. Riebl, *Arch. Rubbercultuur*, May, 1930, pp. 223-48. Tables, graphs. English summary, pp. 249-50.

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Tapping to Death. A Warning. T. H. Holland. *Trop. Agr. (Ceylon)*, Apr., 1930, pp. 204-05.

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Behavior of Pigments During Mixing and Curing. H. A. Depew, *Rubber Age (New York)*, June 10, 1930, pp. 253-55.

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Performance Characteristics of a 4-Inch 4-Ply Rubber Transmission Belt Branded "Condor." J. E. Skane, Preprint of paper read at Thirty-third Annual Meeting, A. S. T. M., Atlantic City, N. J., June 23-27, 1930.

THE CONSEQUENCE OF HAND-TO-MOUTH BUYING

AMPLE evidence shows that total unit costs are reduced wherever good planning is exercised as a function and that the savings in these unit costs as a result of planning are more, by far, than the increased cost of overhead represented by the planning department or the increased costs of overhead as believed to exist as a consequence of hand-to-mouth buying.

Such buying has forced us to think of planning in two mediums, which might be termed line planning and staff planning, representing respectively planning after the order has been received and planning before the order has been received.

The evils with which hand-to-mouth buying is accredited are three in number. First, it is charged with giving the overhead organization more orders to handle for a given quantity of business. Secondly, the required quick delivery time affects the rate of production. Unless the management thinks its way carefully through this situation it is faced with the cost of changing the rate of production frequently, with the attendant taking on and laying off of labor as the rate of buying surges up and down. This is particularly true of industries manufacturing exclusively on a job order basis. Thirdly, the charge is made that the rapid changes in the rate of production reflect themselves into commodity buying and force purchases at unfavorable times.

The demand for quick information and delivery of product focused attention upon the handling of an order whether large or small with some very startling results. It was found that there was a great deal of unnecessary delay, overlapping, and clerical work in the handling of an order, due to varying systems in the branch offices, and the sales, the shipping, and the billing departments. The system was not only costly but extremely slow with regard to procuring information. The result was the creation of a centralized department under staff control called the service department, which was given considerable authority and broad functions, department barriers being surmounted in one jump.

Today, a consolidated department of 107 people handles 15 per cent more orders than were handled previously by 171 people. The service to customers and branches is much improved, both from the point of view of speed and accuracy.

To deal with the second problem presented by hand-to-mouth buying, namely, rapid changes in the rate of production, The B. F. Goodrich Co. met with marked success by taking some of the savings made by organizing the service department and setting up a separate group known as the production control department, consisting of five people to do staff planning work, while the line planning is taken care of by the service department.

Specifically the job of the production control is to establish the rate of production within the various production departments and to notify the service department of the required rate. They have the sole responsibility for the raising and lowering of this rate, the objective being to keep the production rate as uniform as possible, and in any event have the production curve rise slowly and fall slowly—avoiding the peaks and valleys.

In addition to the production control department, we have a raw materials planning division whose duty is to take the forecasts of the production control and turn them into terms of raw material and to release to the purchasing department such

W. S. Richardson

quantities as are consistent with the forecasted rate of production as put out by the production control—the raw materials planning division having full responsibility for the size of the raw material inventory.

I think that too much money can be spent in the planning department by refining methods too closely. After all, our object is to provide a steady flow of work to the employe of the desired kind represented in our expressed obligations to our customers, and to see that this is performed efficiently. I feel that sometimes management ties too many "do-dads" to its coat tails, which careful investigation will prove cannot justify their costs.

Essentially, we do nothing in the planning section of our service department which could be eliminated without raising costs or affecting the quality of our delivery service.

It would be unwise to spend money in the collection or maintaining of data to be used for economic lot sized formulas until the production rate had been leveled to a much more uniform state than now exists throughout our country. Attention of the management should be called to the thought of spending such money as it feels can be used for research in costs to the problem of providing steady employment. With our whole industrial structure built upon a foundation of long time, partial payment buying, industrial soundness is dependent upon a uniformly maintained consumer purchasing power, and the minute we artificially stimulate this buying power by unsound production, we are merely digging tunnels underneath our own house.

[1] By W. S. Richardson, staff superintendent, Mechanical Division, The B. F. Goodrich Rubber Co. Paper read before the Production Conference of the American Management Association in Cleveland, O., June 9, 1930.

New Incorporations

ALLIED ASBESTOS & RUBBER CO., INC., Apr. 29 (N. Y.), capital $20,000. A. F. Townsend, S. Simpson, and H. M. Green, all of 61 Willet St., Passaic, N. J. Rubber products of all kinds.

CASSON CURTAIN CO., INC., May 2 (N. Y.), capital $20,000. A. M. Goldstein, 168 W. 86th St., P. S. Propp, 1235 Park Ave., both of New York, and S. Stone, 911 Willoughby Ave., Brooklyn, all in N. Y. Deal in rubber goods.

HILFER RUBBER CO., INC., June 14 (N. Y.), capital $5,000. A. Kraus, and J. and I. Hilfer, all of 1441 Broadway, New York, N. Y. Rubber goods.

PHILBY TIRE & SERVICE CO., INC., (N. Y.), capital 100 shares no par value. I. and L. Piltz, both of 2101 Creston Ave., and G. Hellman, 2101 Harrison Ave., all of New York, N. Y. Manufacture tires, etc.

RAINBOW RUBBER CO., INC., May 12 (N. Y.), capital $10,000. A. Morgenstern, 234 Penn St., S. and P. Rennert, both of 562 Bedford Ave., all of Brooklyn, N. Y. Rubber goods.

REVERTEX CORP. OF AMERICA, Apr. 23 (N. Y.), capital 1,000 shares preferred stock, par value $100, and 1,009 shares no par value. A. L. G. Hunter, 43 Water St., W. G. Mann, 41 Broad St., and R. Ely, 1 Cedar St., all of New York, N. Y. Deal in concentrated rubber latex and all forms of rubber.

Speed Tires Largely Cotton

Kaye Don's hush-hush car, which was to have been used at Daytona Beach, Fla., in an attempt to break the 231-mile-an-hour record of the late Sir Henry Segrave had tires which were 75 per cent cotton, according to T. T. Andrews, of the Dunlop Cotton Mills, England. The cord fabric plies were impregnated with rubber solution, and the tread was the merest skin of rubber. A normal tread would fly off at any such high speed.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Aetna Rubber Co.	Pfd.	$1.75 q.	July 1	June 15
American Hard Rubber Co.	Pfd.	$2.00 q.	July 1	.....
Baldwin Rubber Co.	Cl. A	$0.37½q.	June 30	June 20
Firestone Tire & Rubber Co.	Com.	$0.40 q.	July 21	July 3
General Tire & Rubber Co.	Pfd.	$1.50 q.	June 30	June 20

Editor's Book Table

New Publications

"Bridge-Banbury Mixer." Bulletin 124. David Bridge & Co., Ltd., Castleton, Manchester, England. A twenty-page treatise on the Banbury enclosed rubber mixer. The machine is clearly described and illustrated; several typical layouts are shown. Special features, applications, advantages, etc., are outlined.

"Glossary of Rubber Products Exported from United States, 1930." Special Circular No. 2,200 (Revised). Prepared by the Rubber Division, P. W. Barker, Acting Chief, Department of Commerce, Washington, D. C. This twenty-page mimeographed booklet is for the use of exporters of rubber products, who, by consulting this alphabetical index of commodities, can find the proper classification number and the unit of quantity (if any) required to be stated for each commodity on the Shippers' Export Declaration.

"The Smoked Sheet." The Dayton Rubber Manufacturing Co., Dayton, O. This illustrated mimeographed sheet is a newly established house organ in letter form sent to dealers handling Dayton Thorobred tires. Ray L. Wetzel, sales promotion and advertising manager, is editor.

"The Painting of Galvanized Iron." This bulletin by H. A. Nelson, Chief of Pigment Research Division, The New Jersey Zinc Co., 160 Front St., New York, N. Y., reviews the properties of various paints suitable for the painting of zinc surfaces. Experience and close observation have shown that zinc dust-zinc oxide paints are eminently efficient. Another booklet to be issued soon is on "The Light Reflection Value of Color in Paint."

"The Black Art of Rubber Compounding—Chat No. 17. Velvetex." Binney & Smith Co., 41 E. 42nd St., New York, N. Y. It discusses the softest form of carbon black useful in rubber goods where elasticity, liveliness, and pliability are paramount. A chart of four micro-photograph reproductions are included showing the comparative particle sizes of Velvetex, zinc oxide, whiting, and China clay. A volume cost chart also is given.

"The Future of Rubber." By J. C. G. Kunhardt. Institution of the Rubber Industry, 10 Charing Cross Road, London, W. C. 2, England. An economic and statistical study of the crude rubber position as at March, 1930. It is presented in two parts: the first of which treats of world stocks, consumption, and production; and the second of depreciation and Dutch native rubber, followed by comments and conclusions.

"Adamson Equipment Catalog No. 66." Adamson Machine Co., Akron, O. This outlines to the trade in a very general way the various types of equipment manufactured by the company. A complete line of basic machinery for the rubber industry is featured as well as accessory and special machines of all kinds.

"Bus and Truck Tubes." Laboratory Report No. 144. E. I. duPont de Nemours & Co., Inc., Wilmington, Del. The tests covered by this report include a comparison of several antioxidants and antioxidant combinations in a typical high grade truck tube compounded with zinc oxide and containing Accelerator 808.

"What's New in Royle Tubing Machines?" John Royle & Sons, Paterson, N. J. An 8-page illustrated folder naming twelve important special features that characterize the well-known machines for tubing and straining rubber stocks.

Book Reviews

"Merck's Index." (Fourth Edition, 1930). Merck & Co., Inc., Rahway, N. J. Cloth, 600 pages, 6½ by 9¼ inches.

An encyclopedia for the chemist, pharmacist, and physician, giving the names and synonyms; source, origin, or mode of manufacture; chemical formulas and molecular weights; physical characteristics; melting and boiling points; solubilities; specific gravities; medicinal action; therapeutic uses; ordinary and maximum doses; incompatibilities; antidotes; special cautions; hints on keeping, handling, etc., of the chemicals and drugs used in chemistry.

The materials described are not restricted to Merck's products. The volume is a valuable contribution to the working libraries of chemists in the industries as well as to men in the professions indicated.

'International Control of Raw Materials." By Benjamin Bruce Wallace and Lynn Ramsay Edminster. The Brookings Institution, Washington, D. C. 1930. Cloth, 5¼ by 7¾ inches, 479 pages. Indexed.

This volume presents the results of a thorough research into the economic problem of governmental control of raw materials, production of which is localized in a particular country. Its opening chapter takes up the nature of the problem showing that it is a revival of a type of restrictive policy as "old as Mercantilism itself."

Subsequent chapters review with keen analysis the varying types of raw material control conspicuous among which was the British export restriction on rubber known as the Stevenson Plan. This plan is outlined, also its effects, aims, results, and final abandonment are analyzed. It is pointed out that while this restriction plan was discarded, the idea of restriction has not been, as shown by the scheme of the tapping holiday of last May. The economic study presented in this volume is most illuminating and significant.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
2665	French Tire Exports, Feb., 1930.
2666	French Footwear Exports, Feb., 1930.
2668	British Exports of Automobile Casings, Jan. and Feb., 1930.
2670	British Exports of Footwear, Jan. and Feb., 1930.
2672	British Exports of Tires and Tubes, Jan., 1930.
2681	Italian Tire Exports, Calendar Year 1929.
2682	Comparative Exports of Solid Tires from the United States, Canada, United Kingdom, Germany, Italy, and France during Calendar Year 1929.
2684	Final Report of Dealers' Stocks of Automobile Tires in the United States, Apr. 1, 1930.
2685	Crude Rubber Reexports from the United States for Mar., 1930.
2687	Canadian Tire Exports, Mar., 1930.
2688	Canadian Tire Exports, First Quarter, 1930.
2690	Canadian Footwear Exports, First Quarter, 1930.
2692	Canadian Exports of Belting and Hose, First Quarter, 1930.
2693	French Tire Exports, March and First Quarter, 1930.
2694	French Footwear Exports, March and First Quarter, 1930.
2695	German Tire Exports, First Quarter, 1930.
2698	Analysis of Export Markets for Hose, 1929.
2699	British Exports of Automobile Casings, March and First Quarter, 1930.
2700	British Exports of Footwear, March and First Quarter, 1930.
2701	Comparative Tire Exports from the United States, Canada, United Kingdom, and France, First Quarter, 1930.
2703	Comparative Exports of Boots and Shoes from the United States, Canada, and United Kingdom, First Quarter, 1930.
2704	Analysis of Export Markets for Belting, 1928.
2708	Belgian Tire Exports, First Quarter, 1930.
2710	Canadian Tire Exports, Month of April, 1930.
2719	British Exports of Automobile Casings, April, 1930.
2720	British Exports of Footwear, April, 1930.
2721	French Tire Exports, April, 1930.
2722	French Footwear Exports, April, 1930.

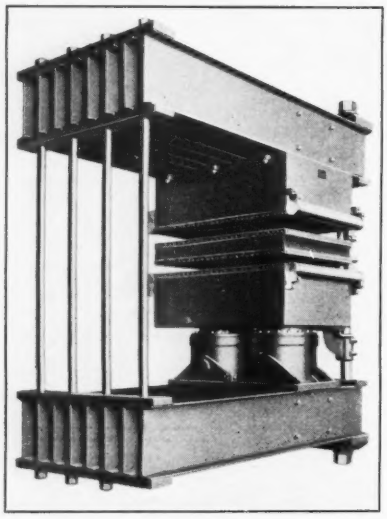
Wobonite 94

Wobonite 94 is the designation given to an oil softener for rubber compounding that possesses the property of quickly and completely dispersing pigments in the mix and producing smooth running stocks. It also confers excellent aging quality to rubber, a fact shown by accelerated aging and service tests.

"Anti-Knock" a Good Antioxidant

Tetra-ethyl-lead, which adds power to gasoline and keeps automobile engines from knocking, can also keep tires from getting old before their time. It is said to be an excellent antioxidant, but is considered far too poisonous to be used in large-scale rubber manufacturing.

New Machines and Appliances



Adamson Endless Belt Press

Special Hydraulic Press

EVERY mechanical rubber goods superintendent and belt press room foreman will appreciate the convenience of the special heavy duty press here pictured.

This press is designed expressly for curing the splice of endless belts. The broad open space at one side of the press platens allows the pressmen free and easy access to position properly the splice of an endless belt of 4 feet or more in width. The platens measure 54 by 70 inches.

This press has been built for various rubber belting manufacturers and can be properly called custom built inasmuch as it is made primarily for the special purpose of curing up joints of belting in endless form. The Adamson Machine Co., Akron, O.

New Hose Machine

A NEW continuous hose making machine for wrapped fabric hose of various plies has recently been introduced to the trade. The machine is particularly adapted for the manufacture of garden, pneumatic, water hose, and air brake hose, as well as small diameter C. I. tubings. The process is revolutionary in character.

Without the use of a mandrel the hose is made in continuous lengths of 500 feet or as long as is practical to handle at a minimum rate of forty feet per minute. It is cured in a lead press.

The machine is entirely automatic and within the control of two operators. It is a labor saver, is fast in operation, and with a low cost per foot will produce a quality of hose superior in hydrostatic and friction test. Spadone Machine Co., 15 Park Row, New York, N. Y.

Safety Carboy Tilters

IN RECLAIMING plants where acids are handled in carboys, a combination tilter, truck, and platform like that pictured offers convenience and economy well worth consideration. This device is at once a simple and safe means of emptying carboys of dangerous acids. With it a workman with perfect ease can control and pour without danger of acid burns from breakage or spillage. Also he drains to the last drop, eliminating waste of contents and the danger that arises from a small amount of acid left in carboys.

A similar tilting truck specially designed for handling barrels of liquids is also shown. With this one man alone can empty containers up to 750 pounds of acids, paints, and all fluids. Schwenk Safety Devices Corp., 70 E. 45th St., New York, N. Y.

Economic Laboratory Stock Rack

Portable Cooling Rack

IN the recommended procedure by the Physical Testing Committee, Division of Rubber Chemistry, A. C. S.,[1] it was specified that after cooling upon a zinc surface rubber batches should be stacked for a number of hours on galvanized wire screens of 6-mesh to insure air circulation before curing.

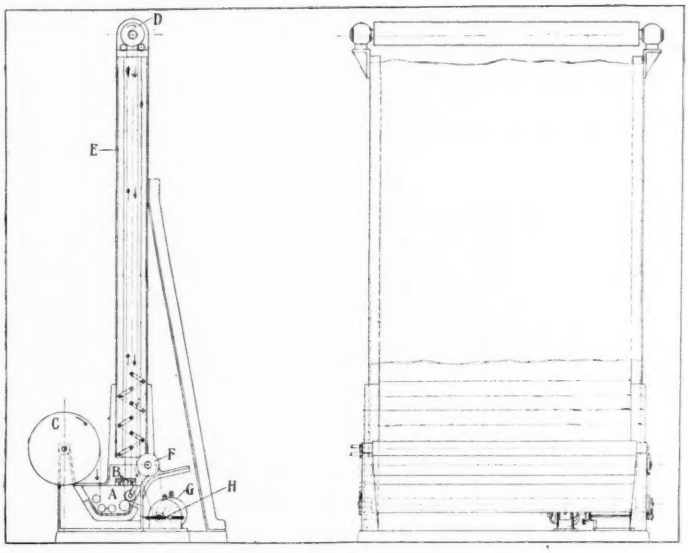
A portable rack suitably designed for this service is here illustrated. It can be built any desired dimensions or number of shelves. The proportions and capacity indicated in the picture answer the usual requirements. The rack is mounted on castors to permit moving it about from place to place and is made sufficiently narrow to allow it to pass through a door of usual width. This construction has met with general approval for laboratory use. The truck is very useful when a number of stocks are to be transferred in or out of the conditioning room. Economic Steel Rack Co., Bowdoin St., Everett, Mass.

[1] INDIA RUBBER WORLD, Feb. 1, 1930; pp. 71-72.

Barrel Tilter

Schwenk "One Man" Safety Tilters

Carboy Tilter



Müller Fabric Impregnating Machine

Revertex Impregnating Machine

THE impregnation of fabrics with latex preparations has necessitated the introduction of special machines for the purpose. One of these is here shown in sectional side elevation and back view. This mechanism is of German origin designed for impregnating fabric with revertex or concentrated latex.

This machine is quite unlike the ordinary horizontal spreader and operates vertically. It consists of an impregnation box *A* to hold the latex and contains a built-in roller system surmounted by a spreading knife *B*, the edges of which are adjustable to contact the fabric as it is drawn from roller *C* upward between them after passing through the impregnating rollers and the latex in box *A*.

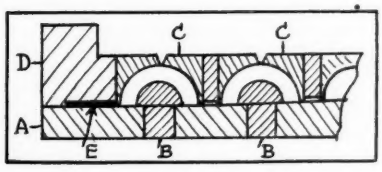
The excess of latex falls back from the knives into the box while the impregnated fabric passes upward over a large roller *D* at the top of a vertically placed drying box *E* containing heating pipes. On its downward passage the dried fabric passes over the idler roller *F* to which power for operating the entire mechanism is transmitted from the motor *G*. The dried impregnated fabric is received and wound on a shell at *H*.

The machine is made for a width of goods not exceeding 63¾ inches. It stands 9 feet 11 inches high on a base 5 by 7½ feet. The capacity of the machine is 39 yards of fabric per hour. Max Müller Maschinen-u. Formenfabrik, Hannover-Hainholz, Germany.

Self-Trimming Golf Ball Center Mold

IT IS particularly important, from the point of view of accuracy, that molded golf ball centers be produced finless, that is, with no overflow at the mold parting surface. This result has been effected by utilizing a mold of a new type shown in cross-sectional form in the illustration.

Unlike the ordinary type rubber mold, which is filled by inserting a rubber blank of suitable size to form the article, the mold pictured is first closed and then filled by forcing stock into it by hydraulic pressure, thus forming a particularly solid article free from trapped air markings and all traces of mold flash overflow or fin.



Goodactive's Center Mold

The construction employed to effect this result embodies a 3-part mold consisting of a base plate *A*, bored through at appropriate intervals to receive the shanks of the plugs *B* that shape the interior of the golf ball half centers shaped in the molding parts *C*. The latter are assembled and enclosed in place by the mold retaining ring *D*. A sheet of steel *E* 3/32-inch thick is located under *D* between it and the base plate *A* as shown.

In the top of each mold cavity *C* is drilled a hole 3/32-inch in diameter through which unvulcanized stock is forced by hydraulic pressure to fill the cavity. The outer rim of each mold cavity is chamfered to a cutting edge under which the air escapes as the mold fills with stock. The mold is sealed against the escape of stock by the sheet of steel *E*, which effectively prevents the formation of a fin of stock around the article.

When the mold is separated after a cure, the steel *E* is removed and the hemispherical centers are taken from the cavities, showing only a slight dimple or mark where the stock entered. United States Tool & Machine Works, 27 Thames St., New York, N. Y.

Calender for Gutta Percha

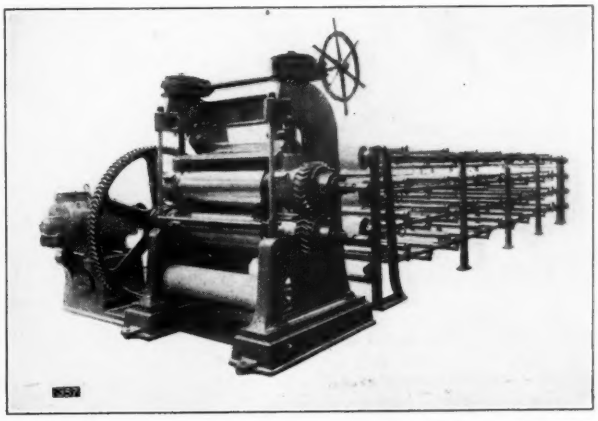
THE special 2-roll calender illustrated below is designed for calendering gutta percha or balata in the form of tissue. This is a heavy open front type with rolls 16 inches in diameter and 42 inches wide.

The machine is equipped at the rear with a special drying frame arranged to be driven from a separate electric motor through a totally enclosed worm reduction gear.

In operation, the sheeted gutta percha or balata emerges from the calender and passes out to the drying or cooling frame onto a conveying apparatus of four endless belts. The sheeted material thus traverses the length of the rack four times. This allows fine sheet to cool and harden by the time it arrives at the end of the fourth belt. Joseph Robinson & Co., Ltd., Salford, Manchester, England.

Speed Races Test Tires

It has been urged that American automobile speed races should be barred, or at least greatly curbed, because of the fatalities occasionally occurring. Extreme tests afford tire makers valuable lessons in designing and building tires to meet the increasing engine power, quicker acceleration, and more efficient braking now required for cars in even ordinary service.



Sheeting Calender for Gutta Percha and Balata

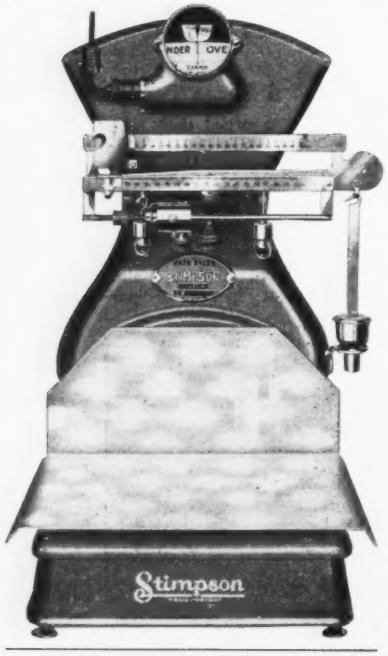
Compounding Scale

A NOTABLE improvement has been effected in the design and the construction of scales for weighing rubber compounding ingredients, tire treads, and other important items influencing cost and quality standards in rubber goods manufacture. The improved scale referred to is here pictured. It is characterized by extreme accuracy and fast operation.

As in a watch, so in a scale, accuracy is attainable only by the elimination of friction. V-shaped agate bearings and knife-edge hardened pivots are used in a scale much as jewels are used in a watch. This new compounding scale contains 22 such agate bearings.

In a rubber compounding department scales are used under conditions very unfavorable to the accuracy and life of a scale because the floating dust inevitably settles in the agate bearings and causes friction. In the scale pictured, felt packing is used to exclude dust from entering its inner workings, and the majority of its agates are in inverted position so that the dust will fall out.

Other features of the scale that merit attention and add to its efficient working are the following. The indicator is of flush type, electrically illuminated with soft indirect green light. The smallest weight is indicated, the lens front giving the index an apparent movement of $\frac{1}{16}$-inch to an ounce. The 50-pound capacity steel beam is marked on its lower edge by 2 pound notches to avoid dust settling in them. A hardened steel dog in special poise is disengaged from these notches by merely pressing a lever. Below the 50-pound



Stimpson Compounding Scale

beam is one of 2 pounds capacity graduated by .001-pound equipped with poise which does not "walk" when tightened. A 20-pound tare beam with automatic stop at zero is equipped with locking balance ball to bring the scale quickly to balance at any time. The platform of the scale is heavy gage steel mounted on 4-point full floating lever system, its main self-alining agate bearings being inverted. Stimpson Computing Scale Co., Louisville, Ky.

Cement and Semi-Paste Mixers

ENCLOSED liquid and semi-paste mixers are standard rubber mill equipment. One special type is motor driven with worm reduction unit and has metal covers. It is plain or steam jacketed and built in sizes from 50 to 5,000 gallons capacity. This mixer is the most compact type, silent in operation and smooth running because all moving parts run noiselessly in an oil bath.

The machine in question is specially adapted for cutting and dissolving rubber for light rubber cements and for producing paste for spreading work. The 300-gallon size is favored for large scale cement production in large rubber plants. Once started, these mixers will run without attention for long periods and can be relied upon to perform good work.

The individually motor driven type mixer is preferable when grouped as a battery over a set of belt driven motors geared to a common shaft because of the independent operation feature which makes for economy in special cases. Charles Ross & Son Co., 148 Classon Ave., Brooklyn, N. Y.

Recovery of Solids from Reclaim Wash Waters

C. W. MOORE[1]

THE wash waters from the alkali process of rubber reclaiming carry fine solids in suspension. The value of these varies with the details of operation from negligible to an item of major importance. The presence of these solids in reclaim sludge is highly objectionable, and its removal is necessary for elimination of waste.

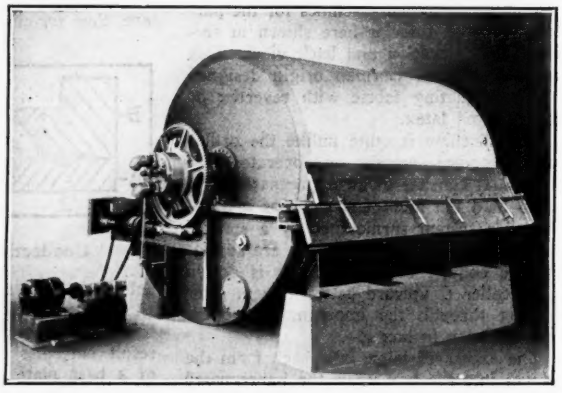
There is no general formula for recovering this material. Wide variation exists not only in its amount and value but also in its physical and chemical properties. The causes of these variations are not always under control.

Each reclaiming plant, therefore, presents an individual problem which usually may be satisfactorily solved by a single one or a combination of the three methods: screening, sedimentation, and filtration.

The commonest method is the use of a fine screen approximately 100-mesh. Water passing through the screen is sent direct to the sewer. This plan can be used only where the amount of solids is small and of such a nature that they tend to coagulate. The water passing to the sewer is rarely as low in solids as is desired, but the method is simple and installation and operating charges low.

Where the use of fine screens is not practical, sedimentation in large basins will serve to clarify the water to a point acceptable as city sewage. The heavy sludge accumulating in the bottom of the basin may be pumped onto waste land, drained, and later returned to process. This method involves the objection that it is costly to return the dried sludge to the plant. Since the sludge has a marked tendency to spread, the capacity of such a waste pond is limited, and retention of the sludge is therefore very uncertain, particularly during periods of unusually heavy rainfall.

Direct filtration of wash waters is not feasible, but the sludge from a settling basin or continuous thickener can be dewatered on a rotary vacuum filter. The filter cake may be mixed with the stock or dried separately and marketed as a low grade product.



Oliver Filter

Recommendations should be based on a careful study of the amount, quality, and character of the solids present in the wash water. Where practical, the use of a thickener and filter gives the most complete removal of solids from the water at a low operating cost.

In the usual thickener filter layout, the wash water is delivered to a gravity thickener. The clear overflow from the thickener is discharged to the sewer. The heavy mud underflow, combined with the floating stock from the surface, is delivered to the filter. The latter removes the excess moisture by vacuum and delivers a firm cake containing approximately 70 per cent moisture.

The chief operating charge is power for the vacuum pump. Repairs and maintenance are low as the equipment is slow moving and rugged. The equipment will in some cases give a recovery of 95 to 98 per cent of the solids in the wash water. Operation is both continuous and automatic.

[1] Oliver United Filters, Inc., 33 W. 42nd St., New York, N. Y.

The Rubber Industry in America

OHIO

H. K. Raymond, former vice president and factory manager, The B. F. Goodrich Co., Akron, O., is in the City Hospital recovering from injuries received recently in an automobile accident.

Northern Rubber Co., Barberton, O., filed an involuntary petition in bankruptcy, and W. P. Welker, trust officer of the Ohio State Bank & Trust Co., was named receiver. The bankruptcy proceedings were started by the Barrett Co., Cleveland, O., recently given a judgment of $278 against the rubber company, and the petition was filed with the consent of its officers. Its assets are said to be $300,000 and liabilities $200,000. In a statement issued with the filing of the petition J. L. Schott, Northern president, said the proceedings were a step in the reorganization being planned. He declared that present assets exceed liabilities, but that recent operations have been unprofitable. Plans were being made to put in new capital, purchase more equipment, and expand the business to include manufacture of goods besides tires.

William O'Neil, president of The General Tire & Rubber Co., Akron, O., manufacturer of tires exclusively for the replacement trade, in reporting that the factory is operating to capacity, called attention to his prediction made at the beginning of 1930, that it would be the best year in the history of the tire replacement business. The company did a larger volume of business in May 1930, than in May 1929. Unit and dollar sales for May 1930 were larger than for the same period last year, which was the second largest month, in volume of business, in the history of the company.

Mr. O'Neil further declared, "I feel confident that the next few months will thoroughly establish the truth of the prediction that 1930 will be the best year in the history of the replacement tire business.

"Our plant is running to 100 per cent of its capacity. During the recent business recession, it was necessary to work shorter hours for a time although we did not discharge any men."

"Graf Zeppelin" on its return flight to Freidrichshafen, Germany, last month included among its twenty-three passengers Fred M. Harpham, vice president of The Goodyear Tire & Rubber Co., and Karl Eickes, of the Goodyear-Zeppelin Co., both of Akron, O. As part of its cargo were a pneumatic tire consigned to Madrid and a set of tires and tubes for the automobile of King Alphonso of Spain.

American Chemical Society, Akron, O., Section, at its meeting on June 7, elected the following new officers: Webster N. Jones, chairman; Herman R. Thies, vice chairman; William F. Zimmerli, secretary; John N. Street, treasurer; Lorin B. Sebrell, Ray P. Dinsmore, and Harlan L. Trumbull, counselors.

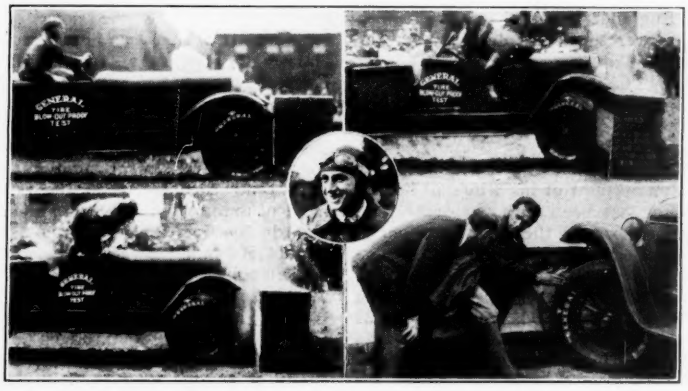
Cincinnati Meeting A. C. S.

The tentative general program has been announced for the eightieth meeting of the American Chemical Society, which will be held in Cincinnati, O., September 8 to 12. All divisions will meet; that of rubber chemistry will hold two half-day sessions and the usual divisional banquet on Wednesday evening, September 10. The final program will be released on August 20.

J. F. Hathaway, R. S. Ferguson, Ray J. Simon, and W. J. Meadows will sail in July for Argentina to take charge of the construction of a Goodyear plant.

Mohawk Rubber Co., Akron, O., has announced the resignation of S. S. Miller as president, a position which he held for more than seventeen years. Mr. Miller, however, who desired to retire from active duties, was made chairman of the board of directors. At the same time Charles Borland, manager of the Federal Electric Co., Chicago, Ill., and a member of the Mohawk board since February was elected president of the rubber company. Mr. Borland, with his family, recently moved to Akron and will make his home there.

The Master Tire & Rubber Co., a holding company formed several months ago to effect a merger between the Falls Rubber Co., Cuyahoga Falls, and the Cooper Corp., Findlay and Cincinnati, all in O., recently offered stockholders of those companies shares in its company in exchange for their holdings. The Master company will hold and own the stocks of the Falls and the Cooper concerns and will control all operations through joint ownership. Basis of exchange of Master for Falls shares are: 2½ shares of Master common for 1 share of Falls $25 par value preferred; 1 share of Master for 2 of Falls common; Ohio State Bank & Trust Co., Akron, is depositary. For Cooper: 1 share of Master preferred for 1 of Cooper preferred; the same for common; Central Trust Co., Cincinnati, depositary. The exchange offer is open until July 10. Combined Cooper and Falls sales are announced in excess of $6,000,000 annually. As of December 31, 1929, their consolidated balance sheet shows current assets of $1,879,771.34 and current liabilities of $741,181.95. Master officers include I. J. Cooper, president; F. C. Millhoff and J. F. Schaefer, vice presidents; R. P. Bremer, secretary; W. P. Cline, treasurer; all of whom with W. G. Lerch, J. B. Firestone, and R. L. Kryder constitute the board of directors.



A SEVERE TIRE TEST

The illustration, from slow motion pictures, shows what happens when a car crashes a brick wall. Capt. Dick Grace, movie daredevil, in the most severe possible test of the blow-out proof qualities of General Dual Balloon 8 tires, General Tire & Rubber Co., Akron, O., drove a car head-on into a brick and concrete wall at 37 miles an hour. After the tires had received the full force of the crash, the springs and the front of the frame struck the wall and were buckled back, forcing the front wheels back against the fenders. The ten-ton wall was moved from its base. After being flattened against the badly bent rims, the tires filled out again as they had been at first. The terrific blow did not injure them in any way, inside or out.

An Adept in Rubber Industry Statistics

Everett G. Holt, now manager of foreign and crude rubber research, The Goodyear Tire & Rubber Co., Akron, O., has well qualified himself for that recently bestowed honor. For years he has made an intensive study of the rubber industry from every angle, and his comprehensive surveys of crude rubber production and marketing and authoritative reviews on the state of trade in rubber manufacturing and distribution have long proved very informative and helpful. Many of his admirable articles, particularly on rubber planting, in the INDIA RUBBER WORLD have been widely quoted here and abroad. In fact, in the realm of rubber he has as a statistician few peers and no superiors.

Mr. Holt was born in Clinton, Me., on November 28, 1894. He attended Clinton High School and Coburn Classical Institute, and at Colby College in 1915 he received the degree A. B. In 1921 he graduated from George Washington University with the degree LL. B.

For two years, 1915-1917, he was principal of Clinton High School. From 1917 to 1921 he served as clerk, examiner, and assistant chief, Examining Division, U. S. Civil Service Commission; from 1921 to 1926 as administrative assistant and Assistant Chief, Rubber Division, Bureau of Foreign and Domestic Commerce; and as Chief of the Division from 1926 to 1930.

Mr. Holt is the author of "Marketing of Crude Rubber," Trade Promotion Series No. 55, Commerce Department, 1928; "International Trade in Machinery Belting," Commerce Department, 1925; "Facts Affecting Imports of Tires, Mechanical Rubber Goods, and Rubber Footwear into Foreign Countries," mimeographed reports with limited distribution, Commerce Department; originated, 1922-1925, "Crude Rubber News Letter," and other special services on rubber, of Commerce Department, and contributed numerous articles to trade periodicals on the trade in rubber and rubber products.

E. G. Holt

He is a Mason (Blue Lodge, Royal Arch and Council), and lives at 2574 Whitelaw Ave., Cuyahoga Falls, O.

Goodyear Operations

Decision of the Goodyear Tire & Rubber Co., Akron, O., to erect a modern tire factory in Buenos Aires, Argentina, upon the site to which it has held title for some time, was announced recently by P. W. Litchfield, Goodyear president. The factory, to be known as the Goodyear Tire & Rubber Co. of Argentina, is located in Hurlinghame, a suburb of Buenos Aires, 16 miles northwest of the city, up the La Plata River. Construction of the plant, a one story building 250 by 460 feet, started on July 1. There will be in addition a boiler room 40 by 89 feet, an engineering building 60 by 66 feet, and a switchboard room 15 by 66 feet. Capacity of this new plant, which will begin operations by February 1, will be a thousand tires and a thousand tubes per day. Its payroll is expected to include 400 employes, Mr. Litchfield said.

Fred W. Climer, for many years manager of the factory personnel department of Goodyear in Akron, will leave shortly for Buenos Aires, where he will be superintendent of the new plant. C. R. Bollinger, of Akron, has been appointed comptroller, and H. Sivaslian will be in charge of the construction work. H. A. Delaney, purchasing agent of the Goodyear Gadsden, Ala., plant, will be purchasing agent for the Argentine plant. He too will soon leave for that country.

A delegation of more than 20 engineers and manufacturers from Paris, France, visited the plant of the Goodyear-Zeppelin Corp., Akron, and inspected the huge hangar. They were met by C. A. Stillman, vice president of the Goodyear Export Co. Following a tour of the Zeppelin corporation's properties the delegation met in the company offices for a round table discussion, after which they returned to Cleveland to continue their tour of inspection of the large industries of America.

William J. Condon, superintendent of Division D at Wolverhampton Goodyear, England, recently was in Akron looking over the latest developments at the home plant.

I. H. Flinn, foreman in the Goodyear Gadsden plant, replaced Ed Kelly as superintendent of Division A at Wolverhampton and sailed on June 7. Mr. Kelly will return to Akron in the near future on account of his wife's ill health. Mr. Flinn has been with Goodyear thirteen years, first in the calender room in 1917 where he was promoted to supervisor and in 1920 was made foreman. In 1925 he was made special foreman in the mill, compound, and liner rooms and was sent to Gadsden to take charge of several departments in 1929.

All Goodyear departments closed for the annual inventory on June 28 to open on July 7, C. C. Slusser, vice president and factory manager, announced. Most of the factory and factory office employes of Goodyear who are entitled to vacations will take one week of their vacations while the factory is closed for inventory. Employes entitled to two weeks' vacation will take the other week later.

Goodrich Changes

At the monthly meeting of the board of directors of The B. F. Goodrich Co. on June 10, Wesson Seyburn, of Detroit, Mich., and Sidney Weinberg, of Goldman Sachs & Co., New York, N. Y., were elected to the board to fill vacancies arising from the resignations, as directors of the company, of A. H. Noah and C. E. Cook.

Goodrich tire departments, Akron, O., closed on June 28 and will reopen on July 7. The annual inventory of stock will be taken during that time. Footwear departments will close later for inventory, officials said, but the date has not been fixed. Other departments of the factory will continue to operate without change.

Harwood M. Bacon, long identified as a manufacturers equipment sales representative of the Goodrich company in the Cleveland, O., territory, has resigned. According to factory advices, his work will be apportioned among the personnel of the Akron, Detroit, and Indianapolis offices of the company.

H. E. Cook, director of engineering for the Goodrich company, addressed the Electrical Maintenance Engineers national convention at Cedar Point last month on "The Benefits We Have Derived from the Use of Synchronous Motors." More than 1,000 maintenance engineers from a score of cities attended.

Firestone Activities

When Billy Arnold on May 30 won the International 500-mile Sweepstakes at the Motor Speedway, Indianapolis, Ind., his victory marked the eleventh consecutive win for Firestone tires at the famous track. The first ten racers who saw the checkered flag rode on Firestone tires, according to the official records.

Members of the Race Drivers' Association, just before the gong sounded for the start of this year's race, presented Harvey S. Firestone, president, The Firestone Tire & Rubber Co., Akron, O., with a silver medal upon which was inscribed: "In appreciation of his untiring cooperation and leadership in the consistent development of tires which have contributed safety to the establishment of automobile speed and endurance records by the drivers in the International 500-mile Sweepstakes at the Indianapolis Motor Speedway, May 30, 1930."

The Firestone Country Club opened its new clubhouse at Akron on May 31, completing golf facilities, including two beautiful 18-hole courses, sponsored by The Firestone Tire & Rubber Co.

Manufacturers Announce Reduction in Tire Prices

Following the announcement of reduction in tire prices by the mail order houses, now come notices of cuts by several rubber manufacturers. The Goodyear Tire & Rubber Co., Akron, O., issued a revised tire price list, the main feature of which was a 5 per cent reduction on the four-ply passenger car sizes and a reduction on inner tubes. The General Tire & Rubber Co., Akron, O., and the Kelly-Springfield Tire Co., New York, N. Y., released similar revised schedules. Later reductions also averaging 5 per cent in various lines were announced by The Firestone Tire & Rubber Co., The B. F. Goodrich Co., both of Akron, and the United States Rubber Co., New York. This cut, making prices the lowest in history for tires with greater mileage prospects, went into effect early last month, and it is hoped that it will stimulate the long-deferred but keenly awaited replacement business.

P. W. Litchfield, Goodyear president, stated that its lower price was made possible through improved manufacturing methods and lower costs of raw materials. The revised schedule, however, shows also a slight decrease in the heavy duty passenger car tires and an increase in the price of some sizes of the Pathfinder heavy duty line.

In announcing its reduction U. S. Rubber said it would proceed with its aggressive sales policy and would continue to afford its dealers an attractive franchise. Its factories have been on a night and day basis for some time past, and demand is continuing unabated.

The Goodrich company, in announcing its change, said dealer discounts also would be adjusted to maintain a profitable basis of operations, reductions without this adjustment resulting in dealer loss through a smaller dollar volume of business.

Antioxidants Improve Aging of Cold Cured Goods

The reason why most chemical antioxidants are ineffective in cold-cured rubber is, according to W. J. S. Naunton, British rubber technologist, that the active groups react with sulphur chloride to give inactive groups. This is proved by incorporating in press-cured soft rubber a chemical antioxidant which has previously been treated with sulphur chloride. It will be found to confer little or no resistance even to accelerated aging. That it is not due to the effect of traces of acid formed from the sulphur chloride is shown by the fact that the same antioxidant after treatment with hydrochloric acid is still quite effective (analogous to diphenylguanidine hydrochloride). If, however, a cold-cured rubber be treated after "sweetening" with a solution of the antioxidant, it will be found that an improvement in aging is conferred. Sulphur chloride is said to be the only substance definitely known to prevent the action of chemical antioxidants.

NEW ENGLAND

The Seamless Rubber Co., New Haven, Conn., has announced the recent appointment of Joseph S. Bennitt as manager of its sporting goods division. Mr. Bennitt's experience ranges from the operation of a retail sporting goods store to the merchandising of a complete line of sporting goods for the largest chain of retail sporting goods dealers in the country.

Andre Rubber Mold Co., Brockton, Mass., recently was incorporated to make molds for rubber heel manufacturers. The officers include Joseph M. Andre, president and treasurer, who is also a partner in the Ward & Andre Mold Co.; E. Louise Andre, clerk; and Arthur Nolan, assistant treasurer.

The Stoughton Rubber Co., adjunct of the American Rubber Co., will close its plant which has been in operation more than half a century in Stoughton, Mass., and for many years under the expert guidance of the late Ira Burnham. The Stoughton factory will consolidate with the Cambridge, Mass., plant of the American Rubber Co. in the manufacture of clothing.

The Coated Fabric Co., Lynn, Mass., has begun manufacturing rubberized fabrics. At present a force of 35 employes will be used, but it is hoped to increase this number to 65 in the very near future.

The Sunbeam Dress Co., New Haven, Conn., will occupy part of the plant controlled by the United States Rubber Co., and will employ 300 workers.

The Lintex Manufacturing Co., Boston, Mass., now manufactures waterproof fabrics.

Martin E. Donlan, well-known Boston tire man, has opened a new one-stop, master tire service station, Donlan & Co., of which he is sole owner, at 1325 Boylston St., Boston, Mass. Mr. Donlan was formerly president of the Pierce Rubber Co. and previous to that was employed by the Kelly-Springfield Tire Co. for sixteen years.

Joseph H. Clancy, president and treasurer of the Massachusetts Tire Co., Boston, Mass., has opened a new one-stop master tire station at 1389 Boylston St., Boston. The new station covers a floor area of 13,000 square feet, one of the largest and most up-to-date stations of its kind locally.

Edward A. Andersen, formerly general manager and president of the Rubber Regenerating Co., who died last December, left an estate appraised at $146,137.22. It consists of stocks, bonds, notes, and real estate. Under the terms of the will, the entire estate is bequeathed to Mrs. Anna C. Andersen, widow, who was also made executrix of the will.

National India Rubber Co., Bristol, R. I., through Factory Manager Maurice C. Smith, Jr., recently announced three promotions. Vinal S. Hastings, chief chemist, has been appointed assistant superintendent of the Keds division. Carlton W. Short, assistant chief chemist, succeeds Mr. Hastings as chief chemist, and Edward J. Cooney, chemist, has been appointed assistant chief chemist.

The United States Rubber Co., Naugatuck, Conn., has posted notices of a two-week closing from July 14 to July 28 to complete inventories and to permit employes to enjoy vacations. Not all departments will be closed during that time, however, as it is planned that certain departments will be closed at different intervals so that there will be no complete shut-down at any time. "Gerry" Carlz, of Winthrop, Mass., has assumed his new position as eastern district manager of the U. S. company, with headquarters in Providence, R. I. He will head the sole and heel division, supervising the territory including the New England States, New York, Pennsylvania, Delaware, and New Jersey. He has been with the rubber company for many years, formerly connected with the Boston, Mass., branch.

The DuPont Viscoloid Co. has announced the resignation of J. B. Spotswood, director of manufacture of the Arlington articles department, who has resigned to accept a position with the United States Rubber Co. C. W. Rehor has succeeded Mr. Spotswood and will be in charge of articles manufactured at both Arlington, N. J., and Leominster, Mass. Frank Welch will continue in his present capacity as production superintendent of articles operations, reporting to Mr. Rehor.

The Fisk Rubber Co., Chicopee Falls, Mass., will take over the activities of the Federal Rubber Co., plant, Cudahy, Wis. Steps are being taken to transfer molds and other necessary equipment from the latter to the former plant. A new schedule of four days a week was inaugurated at the Chicopee Falls plant last month and will continue until further notice. This feature of curtailment also is due to the process of concentration. Although admitting the tire industry generally is in an unfavorable condition, the company is optimistic of an upward trend later in the year. No production workers at the Falls are being dismissed at present, and the possibility exists that additional ones may be taken on in the fall, should conditions improve. Walter A. Richardson, Fisk superintendent, early last month received definite instructions to run off only what cotton was actually in process of manufacture at the Jewett City Ninigret mill, after which the entire plant would be shut down indefinitely, with no promise of opening again during 1930. Cotton bales that were uncut in the picker-room were carted back to the cotton storage, and the doors locked. Within two weeks a large part of the machinery was still, with the whole plant shut down by July. The Fisk company has appointed the advertising agency of Henri, Hurst & McDonald, Inc., Chicago, Ill., to handle its advertising account. It is understood that this change went into effect on July 1.

The Tyer Rubber Co., Andover, Mass., according to Superintendent L. A. Field, in the biggest boom since its organiza-

tion, is operating day and night, employing 510 hands, the largest number it has ever maintained, with enough orders to keep them all busy until the middle of December. During the first two weeks of June the demand for rubber footwear increased 15 per cent. The demand is great also for druggists' sundries and rubberized coverings used in the textile and the paper industries.

The Archer Rubber Co., Milford, Mass., in the twenty-three years of its existence has made noteworthy progress. It started with a capital of only $3,000 and ten employes and grew to a million-dollar concern with an average payroll of from 400 to 600 workers. The company produces Archeroid coating, hospital sheeting, baby pants, crib sheets, bathing caps, and rubber aprons. A new addition, 160 by 60 feet, the size of the original factory, for manufacturing mechanical rubber goods recently was completed and houses several large units of machinery, one lathe weighing six tons. Archer officers are: John T. Callahan, president; F. T. Harvey, vice president; and Franklin P. Lee, treasurer.

The Alhambra Rubber Co., Milford, Mass., although dry weather naturally retarded production this year, reports through President Arthur Webb, favorable progress and is supplying its waterproof clothing to retail stores in New England and the Midwest. The original plant, in 1917, contained one machine and four employes. Now the company has twenty-four machines, much other necessary equipment, and a payroll during busy seasons of twenty-five skilled workers. When the plant is operating at average capacity, one hundred coats are produced daily, and the yearly estimated output is 20,000 coats. The material used by the Alhambra company is rubberized at the plant of the Archer Rubber Co., also of Milford, which supplies 90 per cent of the Alhambra textiles.

The United States Rubber Club of Rhode Island, Inc., held its annual outing and field day on June 14 at Crescent Park on the shore of Narragansett Bay. About five hundred employes of the Providence, Woonsocket, Bristol, and Millville, Mass., plants of the United States Rubber Co. attended. Lunch was served upon arrival. Sports followed. The Providence factory won the factory baseball league championship by defeating the Woonsocket team, with whom it had been tied for first place, by a score of 7 to 0. After the sport program, the members in a line headed by factory managers Arthur H. Carr, of Providence, Maurice C. Smith, of Bristol, and J. Deshler Wilmot, of Woonsocket and Millville, and a band with "Cy" Perkins, of the Providence factory, as drum major, marched to the dining hall where an old-fashioned Rhode Island clambake was served and the sports prizes were awarded. The bowling trophy went to the Providence team, winners of the winter tournament, and the baseball pennant to the Providence factory.

The National India Rubber Co., Bristol, R. I., in its Keds Division is apparently facing anything but an optimistic situation, according to Factory Manager Maurice C. Smith. This division closed for five weeks beginning on June 30, during which time the plant will be generally overhauled, repaired, and renovated. The salaried employes will take their annual two weeks' vacation with pay during that period, but it will be decided later whether they will be paid for the balance of the time. When the factory reopens on August 4, operations will be on a greatly reduced schedule and unless the situation improves decidedly, it may be necessary to lay off many employes. Drastic action may be necessary, according to a statement made to the factory council, to curtail in a great degree the supervision of the different departments and also to speed up production.

Ralph D. Berry, purchasing agent, Davol Rubber Co., Providence, R. I., led the discussion on a paper by Dr. Parker H. Willis on "What Affects Commodity Prices," at the fifteenth annual convention of the National Association of Purchasing Agents at the Hotel Stevens, Chicago, Ill., last month. Mr. Berry is national director of the Rhode Island Purchasing Agents' Association.

The Woonsocket Rubber Co.'s Alice Mill, Woonsocket, R. I., which for the past several months had been operating on a four-day week schedule, has been on a five-day week since April 28. The adding of another day to all departments has placed the United States Rubber Co. subsidiary on practically a normal basis, the change having been necessitated by increased demand for its products. The company's plant at Millville is not affected by this increased production, but probably will fall in line if business conditions warrant it. The Alice Mill employs about 1,800 hands.

The Anaconda Wire & Cable Co. purchased a two-story building and 144,000 square feet of land at Main and Moshassuck Sts., Pawtucket, R. I., opposite the present Anaconda plant. The new building will afford more than 25,000 additional square feet of floor space and according to Manager Emerson P. Smith will enable the company to relieve congestion in the present four-story building. The lacquer process department will be moved from the present to the newly acquired property. At present 250 persons are employed at the Pawtucket plant, which is one of nine operated by the Anaconda company.

Howard S. Almy, of the Collyer Insulated Wire Co., Pawtucket, R. I., was elected second vice president of the Rhode Island Association of Credit Men at its recent annual meeting. Ernest I. Kilcup, of the Davol Rubber Co., Providence, R. I., was elected secretary.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country
*†45,544	Bathing caps, balloons, toys, waterproof garments, shoes, and specialties	Courbevoie, France
†45,545	Belts	Rome, Italy
†45,558	Druggists' sundries	Basel, Switzerland
†45,569	Shoes	Milan, Italy
*†45,570	Sport goods	Paris, France
†45,588	Rubber goods	Buenos Aires, Argentina
‡45,618	Belting	Toronto, Canada
†45,625	Tires and tubes	Bahrein, Persian Gulf
*†45,642	Bathing caps, druggists' sundries, toys, and balloons	Nice, France
‡45,643	Scrap tires	Susak, Yugoslavia
†45,653	Tires	Cairo, Egypt
*†45,691	Balloons	Penang, Straits Settlements
†45,705	Bathing caps	Hamburg, Germany
*†45,712	Rubber goods for industrial uses, orthopedia, hygiene, toys, etc.	Barcelona, Spain
†45,713	Household articles and druggists' sundries	Solothurn, Switzerland
†45,724	Tires and tubes	Balsthal, Switzerland
†45,726	Tires	Rome, Italy
†45,734	Tires	Bergen, Norway
*45,735	Waste and scrap rubber	Bordeaux, France
‡45,737	Sport goods	Berlin, Germany
*45,764	Druggists' sundries	Barcelona, Spain
†45,788	Tire accessories	Berlin, Germany
†45,792	Coats	Berlin, Germany
†45,818	Footwear	Wellington, New Zealand
†45,831	Bathing caps, bags, and gloves	London, England
*45,904	Tires	Berlin, Germany
†45,905	Bathing shoes, household, and sport goods	Berlin, Germany
†45,910	Heels	Bogota, Colombia
*†45,939	Bathing caps, balloons, toys, and specialties	Paris, France
*†45,952	Tires	Vienna, Austria

*Purchase. †Agency. *†Purchase and Agency. ‡Either.

Heliozone

Heliozone, a preventive of sunchecking of rubber goods, is a light green compound of waxy nature melting at about 67° C. (153° F.). This temperature being below the normal heat of milling, heliozone melts on the mill and dispenses readily and completely in a rubber mixing. The light green of the material does not impart any color to white or light colored stocks that contain it.

Heliozone functions to protect rubber against sunchecking because it blooms to the surface after cure, forming a continuous plastic film which cannot be scraped off. This protective film is invisible and retains its plasticity at temperatures as low as 0° F. It does not dissolve in the rubber and disappear at high temperatures. Thus it affords protection against sunchecking in both summer and winter. Maximum protection is afforded by 2 per cent of heliozone based on the rubber content of the stock. In most cases ½ per cent is sufficient to give satisfactory protection.

Heliozone is generally most conveniently added to the rubber immediately after the break down but may be added at any time during the mixing. It is not an antioxidant in any sense of that word, and it is advised that a good antioxidant be used in addition to it.

NEW JERSEY

The rubber situation in New Jersey has changed a little during the past month, with certain products falling off while others increased. Some plants report large production of fire and garden hose, belting, and packing. The hard rubber situation also shows a little gain, while the demand for jar rings is better. Tire prices remain the same, and the output is good. Warm weather likewise has increased the demand for rubber athletic goods.

The Rubber Manufacturers' Association of New Jersey held its annual outing and golf tournament at the Trenton Country Club, Trenton, on June 17. About thirty-five members attended and participated in the tournament following the dinner. Ray Lambert captured the low gross prize with a score of 82. Horace T. Cook, president of the Hamilton and Acme Rubber Manufacturing Cos., was a close second with 83. Wilkens and Case tied for the low net with cards of 75. A. L. Viles, general manager of the R. M. A., was a guest.

Crescent Insulated Wire & Cable Co., Trenton, has let a contract for a small factory addition.

Murray Rubber Co., Trenton, announces that it is operating about 80 per cent capacity and that business is very good. May showed an operating profit over April, and a larger gain was expected last month. The company now has 1,500 chain tire stores and expects to increase by 2,000 by early fall.

Luzerne Rubber Co., Trenton, reports that business has increased a little during the past month.

Lambertville Rubber Co., Lambertville, continues busy and is looking forward to a good summer.

Miah Marcus, treasurer of the Puritan Rubber Co., Trenton, returned after several weeks from a business trip in European cities, where he found improved conditions. The Puritan company is operating to capacity.

Combination Rubber Co., Trenton, had increased business during the past month. The Hamilton Rubber Co., located in the same plant, is running normally, producing Victor-Springfield tires and tubes.

The Fisk Rubber Flap Tube Co., Yardville, may be reopened soon to manufacture the tube patented by the late Clark Francis Fisk, of Trenton. Attorney Paul H. Wendel, 244 E. Hanover St., Trenton, is endeavoring to organize a group of men to take over the plant. Mr. Fisk, formerly superintendent of the old Zee Zee Rubber Co. and organizer of the Nottingham Rubber Co., took over the former company's plant at Yardville to manufacture his tube. Following his death the plant was closed and finally sold.

William J. B. Stokes, prominent Trenton rubber manufacturer, has a new pastime, as artist, for his leisure hours. For the past three years he has spent most of his after-business hours with his pencils and paints. He turned his attention to art following the painting of a picture of Colonel Charles A. Lindbergh nearly three years ago, and later tried his hand at water colors. During his many years as a rubber manufacturer he frequently designed machinery for use in his plants, and his ability to draw aided him in this work. Several times a week he visits his plants, the Thermoid Company and the Joseph Stokes Rubber Co., and the Broad St. National Bank, where he is a director.

Pierce-Roberts Rubber Co., Trenton, reports increased business, being very busy in the molded goods department.

Pocono Rubber Cloth Co., Trenton, experienced improved business due to jobbers placing larger orders for rubber products.

Joseph Stokes Rubber Co., Trenton, has all its departments busy. Business considerably improved over the previous month.

Annual Meeting A. S. T. M.

The American Society for Testing Materials held its thirty-third annual meeting at Atlantic City, N. J., June 23-27, 1930.

Committee D-11: On Rubber Products. W. B. Wiegand, chairman, reported progress on abrasion tests for rubber products and on methods for testing flow under compression on rubber products used to absorb vibration. Reports authorized on preparation of specifications for insulated wire and cable were so modified as to permit the use of organic accelerators.

A symposium on rubber belting was conducted comprising the following program of papers:

Performance Characteristics of a 4-Inch, 4-Ply Rubber Transmission Belt, Branded Condor. J. E. Skane. Described the apparatus used in performing the tests. Discussed the methods of bringing the belt up to speed, application of tension, load, and slip.

Stretch in Rubber Transmission Belting. C. W. Staacke.

Service Tests on Rubber Belting. E. G. Kimmich. Reported results of extensive tests on rubber belting to determine the relative influence of various service conditions on the time that a belt will resist ply separation, giving the time required to separate the plies in a mathematical expression based on these tests.

Laboratory Flexing as an Aid in Investigating the Pneumatic Tire Carcass. H. A. Depew and H. C. Jones. Presented results of an investigation of laboratory methods that may be applied to the development of the pneumatic tire carcass. Discussed the pulley flexing test, the free bend test, and the jerking test on tires.

Report of Committee D-13: On Textile Materials. W. H. Whitcomb, chairman. Recommended the adoption as standard of definitions for the terms loop knot, gage, and regain. Presented for immediate adoption revisions in standard specifications for tolerances and test methods for tire fabrics other than cord fabrics, and for cord tire fabrics. Proposed new tentative revisions in standard general methods of testing woven textile fabrics, in specifications for textile testing machines and for certain light and medium cotton fabrics. Proposed revisions in tentative specifications for chafer tire fabrics and methods of identification of textile fibers. Recommended the withdrawal of the tentative methods of testing cotton fibers.

Mellon Institute to Expand

Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh, Pa., according to Dr. Edward R. Weidlein, director, speaking for the board of trustees, will increase its facilities by a building project enabling the expansion of all its research activities. Construction will begin this fall.

The building, to occupy the site of the Institute's Building No. 2, will provide ample space for housing many more Industrial Fellowships than the present 63. The Institute's other departments will be increased in proportion. Besides providing a greatly increased number of laboratories, the new building will give more commodious quarters for the general departments. The present library contains 11,000 volumes; the new library will accommodate 250,000 volumes. The present Department of Research in Pure Chemistry will be expanded and facilities for pure research in other branches of science will be provided. Much more elaborate chemical engineering laboratories will be available. Also the fellowships in each specific field of industrial research are to be grouped in suites of rooms so that they can best make use of general apparatus adapted to their needs. Certain rooms will be equipped for specialized phases of experimental technique such as electrochemistry, spectroscopy, low temperature studies, radiations, high pressure experimentation, etc. Other special features include a large lecture hall, a dining hall, an industrial fellowship museum, and an underground garage. For the past five years members of the Institute's Executive Staff have been visiting important laboratories in America and Europe to obtain information on new features in design and equipment.

The new laboratory structure will be of the Ionic classical Greek architecture, approximately 300 by 400 feet and seven stories high with monolithic columns along all four sides. The laboratories are to face on interior courts. The design of the new building is such that additional laboratory suites can be constructed in the interior courts without marring the beauty of the general appearance and without interfering in any way with the original laboratory units.

EASTERN AND SOUTHERN

General Atlas Carbon Co., New York, N. Y., has just completed an agreement with Herron, Rodenbough & Meyer, Akron, O., by which the latter will become its direct sales representative for Gastex carbon black. By this arrangement the Akron concern is now sales agent for both Gastex and Palmer blacks. Fred C. Batchellor, who has been handling the sales of Gastex for the entire country, will be in charge of New England and Atlantic seaboard sales with headquarters at 60 Wall St., New York, N. Y.

A. A. Somerville, vice president of R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y., returned on June 23 from a two months' European trip devoted to visiting the rubber manufacturing centers of various countries and the agents of the Vanderbilt company. Mr. Somerville read a number of papers on rubber testing before technical societies in London, Birmingham, Paris, and Frankfort. His tour took him to many other cities beside those named and included trips by airplane from London to Paris and from Berlin to Leningrad.

Howard E. Raymond, a director and former vice chairman of the board of the B. F. Goodrich Co., who died on October 8, 1928, left an estate appraised recently at $1,090,526 gross and $1,041,087 net, of which $794,031 was in securities and $45,700 in real estate. He held 1,158 shares of preferred and 490 shares of common stock of the Goodrich company. The bulk of his estate went to his aunt and his two cousins. Other bequests were for the Church of Our Father, Universalist, the Brooklyn Home for Consumptives, the Chapin Home, all of Brooklyn, N. Y., and the First Universalist Church and the Mary Day Nursery, both of Akron, O.

The General Rubber Co., Singapore and Penang, Straits Settlements, and 1790 Broadway, New York, N. Y., elected Arthur Jones, of London, England, as president. E. C. Schwab was reelected vice president and appointed manager of the New York office. Mr. Jones has been with the company since 1907 and since 1927 has been managing director of General Rubber Co., Ltd., London. He is one of the best-known crude rubber men of Great Britain and the Continent and has served as Chairman of the Rubber Trade Association. In addition he has been a frequent visitor to the United States and has a wide acquaintance among the executives of most of the rubber manufacturing companies. He is familiar with rubber plantations and crude rubber in all foreign markets and has visited the plantations in the Far East.

Sniffin, Arnold & Co., crude rubber broker, recently was organized with offices at 25 Beaver St., New York, N. Y. Telephones Hanover 9547-8-9. George W. Sniffin and Fred L. Arnold are the principals. The new company represents Frank Zech & Co., Akron, O.

Joseph A. McNulty, 114 Liberty St., New York, N. Y., importer of iron oxides, has returned from a trip to the Pacific Coast. He reports that western business is improving with an excellent outlook for the remainder of the year.

A. M. Astor, long associated with the rubberized fabric industry, has joined the J. C. Haartz Co., New Haven, Conn. Mr. Astor has been appointed manager of the rubberized specialty fabric department and will make his headquarters at 151 Fifth Ave., New York, N. Y.

Justus Doane Anderson last month became associated with Jackson-Babbitt, Inc., commercial research engineer and business negotiator, New York, N. Y. This marks the return to business activity of the former vice president of the Fisk Rubber Co., who relinquished that post in 1927, after years of service. In the early days he was president of the Hartford Rubber Works, and later general sales manager of the U. S. Tire Co., becoming a prominent figure in the tire field through his activity in such organizations as the Tire & Rim Association of which he was at one time president and director.

A. Schrader's Son, Inc., Brooklyn, N. Y., manufacturer of tire valves and gages and accessories, announces that Arthur G. Underwood, for several years manager of accessories sales, has been made assistant sales manager. Mr. Underwood in his new capacity will cooperate with Roy L. deBrauwere, assistant secretary and sales manager of

A. G. Underwood

the Schrader company. Mr. Underwood is well known to the automobile accessory trade throughout the country. He was born and educated in Brooklyn, N. Y., and joined the Schrader organization in 1924.

The Roessler & Hasslacher Chemical Co., New York, N. Y., held its annual sales and service convention at Niagara Falls on June 9, 10, 11. In attendance were executives from the company's manufacturing plants and New York offices, district sales managers, sales and service men from various branches in the United States, Canada, and Mexico. The convention was presided over by Dr. H. R. Carveth, president. Activities included inspection tours about the Niagara Falls plant, visits being made to several of the process departments. The business sessions were featured by pertinent papers discussing manufacture, service, and sales of R. & H. products. The annual banquet was held on June 10 at the General Brock Hotel, Niagara Falls, Ont., Canada. The speaker was J. E. Hatt, general manager, du Pont Cellophane Co., New York, N. Y.

John Robertson Co., Inc., manufacturer of hydraulic presses and pumps, 133 Water St., Brooklyn, N. Y., has announced that during July and August its offices will be closed on Saturdays. During the past year its plant has been on a five-day-week schedule, being closed on Saturdays, and will continue on this basis.

Continental Rubber Works, Erie, Pa., has announced the resignation of Harland L. Miller, its representative for the past six years in New York, Pennsylvania, Ohio, Michigan, and Kentucky. Mr. Miller has joined the Atlas Supply Co., New York, N. Y. He is succeeded at the Continental company by Howard J. Luckenbill, for several years its representative in the Southwest. J. E. Holland, for many years with the Chicago branch of the company, will take over the Southwest Territory.

Vulcanized Rubber Co., Morrisville, Pa., now operates four days a week and expects to be running full time by late summer. The concern says business shows a little improvement.

Thomas A. Edison in a recent interview at Fort Myers, Fla., prior to his return to West Orange, N. J., said that the selling of crude rubber below the cost of production is a bad thing for everybody. In search for a satisfactory rubber producer, the aged inventor tested more than 700 varieties of plants growing around Fort Myers and discovered that about 10 per cent contained rubber. He still considers golden-rod best for his purpose.

United States Bureau of Standards, Washington, D. C., through George K. Burgess, director, has announced the appointment of Dr. Archibald T. McPherson, of Marceline, Mo., as chief of the rubber section of the bureau to succeed P. L. Wormeley, who has been transferred to be head of the new section of specifications and testing established on July 1. Dr. McPherson has been connected with the bureau since January, 1918, but has served continuously only since 1923, specializing in research covering the electrical properties of rubber.

Muehlstein's Annual Outing

The summer outing tendered annually by H. Muehlstein & Co., Inc., 41 E. 42nd St., New York, N. Y., to its office staff was held on Saturday, June 14, at Venetian Shores, Lindenhurst, Long Island. Forty-one persons attended. The occasion was most enjoyable.

The usual sports were engaged in, including swimming, dancing, and a ball game in which the married men's team was matched against one of single men. The score resulted 19 to 16 in favor of the bachelors. Luncheon and dinner were served to the gathering. The interesting events of the day were photographically recorded in movies taken by Paul Meyerfeld. The party returned at midnight by bus to New York.

S. A. E. Silver Jubilee

During the last week in May the Society of Automotive Engineers, Inc., celebrated its twenty-fifth anniversary at French Lick, Ind. A historical pageant, a historical museum exhibit, and an array of papers of unusual instructional and informational value presented at the twelve technical and two general sessions held during the meeting were outstanding features of the celebration.

In the exhibit The B. F. Goodrich Rubber Co., Akron, O., display included samples of tires and tire construction showing the progress from 1898 to date, also an interesting group of early photographs of tours and races, including a visit of the Society to the Goodrich plant in 1912. Immediately beyond, The Goodyear Tire & Rubber Co., Akron, showed a 10-foot model of the new 6,500,000 cubic feet, 75-passenger Zeppelins which it is building, also models of its dirigibles and sections of duralumin construction.

MIDWEST

The Fisk Rubber Co., warehouse, Dubuque, Iowa, starting on July 1 will be under the charge of H. J. Nachtman, who recently resigned from the L. P. Cournshon Co., Mason City, Iowa, of which he had been secretary and treasurer for four years.

The Harshaw Chemical Co., Cleveland, O., has opened an office at 4908 Delmar Blvd., St. Louis, Mo., with Robert Galbraith, sales manager, in charge. Telephone Forest 2572.

Harold S. Falk, vice president and works manager, The Falk Corp., Milwaukee, Wis., on June 11 received an honorary degree of Master of Science from Marquette University in recognition of his work in promoting the apprentice training movement in American industries. Mr. Falk has played a leading part in the revival of this training which has taken place in the last ten years in American industry. In addition to building up an effective apprentice training system in his own plant, he has been for ten years chairman of the Apprenticeship Committee of the National Metal Trades Association in Milwaukee, and under his direction the number of apprentices in the machinery building industries of the city has grown from about 400 in 1920 to 1,100 at the present time.

William Ogden Hadley, general manager, St. Louis Rubber Cement Co., of St. Louis, Mo., observed his sixty-second birthday on June 14. He has been engaged in the rubber cement trade for forty-eight years, and he and his brothers Frank K. and Harmon L., are celebrating the eightieth anniversary of the Hadley family in rubber cement. William Hadley, their grandfather, was the first man to make rubber cement in the United States, in 1850 at Lynn, Mass.

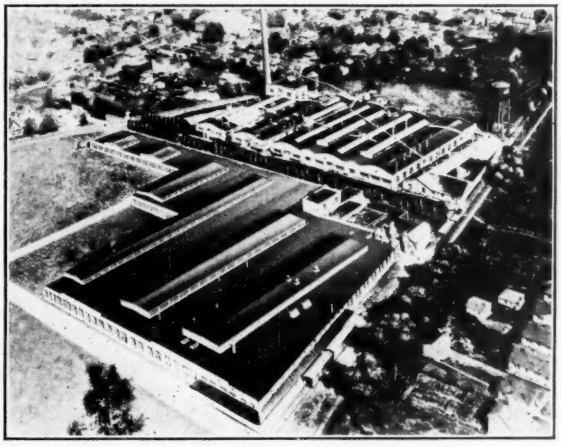
The National Association of Purchasing Agents at its fifteenth annual convention held last month in Chicago, Ill., included among its speakers Robert C. Kelley, of Boston, Mass., purchasing agent for the Converse Rubber Co., Malden, Mass., who addressed the gathering on "The Relation of Adequate Purchasing Records to Efficient Purchasing and Its Measurement."

The United States Rubber Co., Tire Department, Detroit, Mich., had its manufacture of tires given an intensive study recently when twenty-six French automotive engineers, in America to compare our efficiency to that of France, visited the tire plant. B. J. Lemon, field engineer of the Tire Department and a past president of the Detroit section of the Society of Automotive Engineers, acted as host to the distinguished foreign group during its stay at the plant. Included in the group were the engineering heads of the leading foreign automotive manufacturers. After remaining in Detroit for ten days, the visitors proceeded to French Lick, Ind., to attend the annual summer session of the American Society of Automotive Engineers.

The company announces also that James H. Holden's entire business experience has been spent with U. S. Tires. After graduating from Rhode Island College in 1922, where he majored in chemistry, he entered the old Morgan & Wright plant in Detroit as a special student in the production department. For two or three years following this he was engaged in the chemical laboratory in experimental and development work. In 1927 he was appointed technical representative of the tire executive department. Recently he was made special sales representative on heavy service tires with headquarters in Hartford.

THE INLAND MANUFACTURING CO.

THE Inland Manufacturing Co., Dayton, O., enjoys the unique distinction of being one of the few General Motors companies not acquired by purchase, but created within the corporation. It is, therefore, a real General Motors baby. Organized in 1922 to manufacture wood steering wheels only, the company's products have since broadened to include rubber and composition steering wheels, battery containers, ice cream cabinet lids, steering wheels and metal-plastic parts in color, insulating and shock absorbing mounting bolts, mounting brackets, supports, bushings, turntables, running boards, wheels and molded parts, and rubber products of various kinds.



Airview of the Inland Plant, Dayton, O.

The company is the only division of General Motors making rubber parts. Its rubber research and development laboratories are elaborately equipped and efficiently manned, and its rubber plant capable of both mass and specialty production.

While many of these products were designed and developed for use by divisions of the General Motors Corp., most of them are also finding ready markets outside of the corporation, and the demand promises soon to eclipse that from the parent company. This augmented business has made it necessary for the Inland company to double its capacity by the construction of a new $1,000,000 addition which started operation in January, 1930.

PACIFIC COAST

Pacific Goodrich Rubber Co., Los Angeles, Calif., reports that the working shift is being gradually extended and various production processes are being speeded up to take care of the steady increase in orders. Vice President and General Manager S. B. Robertson spent the latter part of June making trade visits in the Northwest. General Sales Manager F. E. Titus left on the 17th for a trip to New York, stopping at the Goodrich plant in Akron, O., on the way. Advertising Manager E. T. Morris, who has been at Akron, will return to Los Angeles on July 10. Recent visitors at the Los Angeles Goodrich plant were: Former Chief Chemist Arthur Kelly, Russell M. Moody, and Arthur Capron, all of the parent Goodrich works in Akron. They were en route to Yokohama, Japan, where they will join the staff of the Goodrich plant there, which starts this month to manufacture tires in addition to mechanical rubber goods. Mr. Kelly will have charge of development, Mr. Moody of tire designing, and Mr. Capron of milling and calendering. Another late visitor was David W. Spence, vice president and chief chemist of American Rubber Producers, Inc., who has lately been spending much time at the company's guayule experimental station in Salinas, Calif.

The Coast Tire & Rubber Co., Oakland, Calif., according to President Louis S. Budo, finds business steadily returning to normalcy and looks for much activity early in the fall. The company recently introduced a new super-service balloon tire in a full line of sizes, and a heavy express truck tire in 5-in., 6-in. and 7-inch sizes. Another innovation is a red tube in the Scout brand in the popular sizes. It is made without reclaimed rubber. It is stated that the company's non-puncturable "Eversafe" inner tube is making excellent headway, and sales may soon be pressed well beyond the Coast field.

Samson Tire & Rubber Corp., Los Angeles, Calif., is very busy operating twenty-four hours a day with three shifts. The advantages of straight-line production without any back tracking, and the up-to-date mechanical equipment throughout the works are said to be strikingly demonstrated, and even with the high efficiency thus obtained the pressure of orders may soon require an increase in the plant's capacity of 6,000 tires and 10,000 tubes daily. Finishing touches are now being put on the six-story administration building, and the office force now at Eighth and Crocker Sts. expects to move into the new quarters late in July. Later in the summer it is likely that the formal opening of the new works will be celebrated.

Beyerle Mfg. Co., 224 E. 11th St., Los Angeles, Calif., branch of the rubber goods company of the same name in New York, N. Y., has, according to Manager A. H. Epstein, recently increased its sales force and is steadily adding to its output of many types of rubber aprons and toilet goods.

Goodyear Tire & Rubber Co. of California is again scoring close to its record production of last year, and the past month was the busiest in the company's career. Much of the sales activity is attributed to the recent cut in tire prices. On June 14 the company celebrated the tenth anniversary of the opening of its textile mills, adjoining the tire plant, and a guest of honor from Akron was Sam A. Steere, manager of the Cotton and Fabric Division for International Goodyear. Mr. Steere, known as the "Father of Supertwist," was the first superintendent of the textile mills in Los Angeles. P. W. Beggs, present superintendent, states that the mills produced 7,007,370 pounds of finished fabric in 1929, that 28,548 spinning and 10,536 twisting spindles are used, three shifts daily are employed, and yearly payroll exceeds $642,000. All of the cotton used is obtained from Arizona and Southern California plantations.

That the parent Goodyear concern in Akron regards Los Angeles as a good training ground for executives has been further evidenced in the recent appointment of Vice President and General Superintendent Edwin J. Thomas, of the California plant, as assistant to Vice President Clifton Slusser in Akron. He will be succeeded on July 1 by L. B. Tomkinson, who has been assistant head of the Goodyear Flying Squadron in Akron. President John W. Mapel and Sales Manager J. K. Hough of the California company spent the past few weeks at the Goodyear Akron works.

Mohawk Rubber Co., Akron, O., under the direction of Vice President and General Manager J. F. Jones has just completed a trade survey on the Coast and reports conditions as very encouraging. He made his headquarters at the company's two branches: 560 Seventh St., San Francisco, and 1224 Santa Fe Ave., Los Angeles, being the guest of Branch Manager W. G. Fitzgerald in the former and of Branch Manager Geo. W. Cowden in the latter city.

Firestone Tire & Rubber Co. of California completed in mid-June a specially designed steam boiler and by-product power system at its factory in Los Angeles. The installation was supervised by R. R. Jones, Firestone power expert, of Akron, who returned to the latter city on June 17 after four months' work in Los Angeles. The new equipment can produce 100 tons of steam an hour, constantly generating 600 pounds' pressure, although the pressure ordinarily required may not exceed 100 pounds. The installation is one of several new features which it is said will greatly expedite operations in the milling, tire building, and vulcanizing departments. Production is steadily increasing, and sales are said to be setting new records.

The Firestone company celebrated in mid-June the second anniversary of the making of the first tire at the Los Angeles plant by Harvey S. Firestone, Sr., president of the parent concern in Akron, and of the practical completion of the extensions to the plant which have given it a productive capacity of 15,000 tires and 17,500 tubes daily. The plant employs an average of 2,800 persons and has an annual payroll of about $5,000,000. Vice President R. J. Cope has general charge of production, and Vice President R. C. Tucker of sales.

Tire Service Co. Firestone distribution in San Francisco will be effected largely through the Tire Service Co., which has just opened at Bush and Franklin Sts. what is said to be one of the largest and most complete stations in the country. It will supplement the company's station at 18th and Mission Sts. Pat Leland, president, and W. D. Johnson, manager, are old-timers in the Firestone sales service on the Coast.

American Rubber Mfg. Co., Oakland, Calif., of which N. S. Dodge is president, reports that, despite the general quiet condition of business, it has been finding trade excellent and that sales of heavy belting, various types of hose, and mechanicals show a gradual increase. A considerable quantity of specially constructed gasoline hose was recently supplied to the S. S. *Saratoga,* airplane carrier, as well as other naval orders being filled. The company recently moved its Los Angeles warehouse from E. Sixth St. to 326 E. Third St., in the wholesale and retail rubber district.

India Tire & Rubber Co., according to Pacific Coast Manager W. R. Wheatly, whose headquarters are at 460 Ninth St., San Francisco, Calif., has been experiencing a marked upturn in business during the past few weeks, and the outlook is considered excellent. He recently visited nearly all the leading India distributers in the Coast field.

Lee Rubber & Tire Co., Conshohocken, Pa., recently had as guests San Francisco Branch Manager J. J. Pie, M. H. Granfield of the same city, G. S. Wolverton and W. B. Guyton, of the Guyton Co., C. D. Pate, A. B. Aridson, Los Angeles, and S. J. Carter, Pasadena. They were greeted at the factory by E. L. Van Duren, who has charge of the Pacific Coast Division.

Franz Foundry & Machine Co., Akron, O., which operates a branch factory at 726 E. 60th St., Los Angeles, Calif., has been doing well of late in the southwestern field. It has not only been supplying much mechanical equipment for rubber factories in that section but has also been providing various specialties for the oil industry, latterly featuring an underreamer drilling tool. The plant is under the supervision of J. Flynn, formerly of Akron, O. The office manager is Wm. Franz, brother of the president, C. W. Franz, who has been spending the past few weeks in Akron.

Carrier Engineering Corp., now located in its own new building at 748 E. Washington St., Los Angeles, Calif., reports quite an improvement lately in business. It has supplied conveying systems, air-conditioning apparatus, and equipment for several Coast factories.

CANADA

Rubber goods dealers are selling quantities of garden hose and they claim that if the next two weeks are dry and warm, stocks will almost be cleared out.

Rubber companies recently cut prices from 5 to 7 per cent on some of the heavier high pressure cord and truck tires in six-, seven-, and eight-inch sizes. Other balloon and high pressure cord tires are without change in the new price list.

A report of the forty leading industries of the Province of Ontario for the calendar year 1928 has just been released by the Dominion Bureau of Statistics. Rubber goods including footwear ranks fourth, valued at $76,152,513.

The American Wringer Co., Ltd., Farnham, P. Q. An item that appeared in this column last month to the effect that the above-mentioned company had completed negotiations with the Stedman Rubber Flooring Co. to manufacture rubber flooring, is erroneous. The facts of the case are: James H. Stedman sold the controlling interest in Stedman Products Co., now Stedman Rubber Flooring Co., South Braintree, Mass., U. S. A., but did not include the Canadian trade mark or patent rights, his personal property. He has recently completed arrangements with the American Wringer Co., whereby it will manufacture the J. H. Stedman Naturized Flooring under his patents. Mr. Stedman has placed the merchandizing sales rights with a leading Montreal firm, which will act as distributer. It is Mr. Stedman's intention, we are given to understand, to spend considerable time in Farnham developing several new products which he has under way. He will at the same time give especial attention to the development of Stedman flooring sales both in Canada and the British Empire.

Chadwick Mather, assistant manager, footwear department, Gutta Percha & Rubber, Ltd., Toronto, Ont., recently returned from a trip through Western Canada as far as Vancouver, B. C., during which he visited the company's various branches. He is very optimistic over prospects in the West, where several branches were surpassing last year's business.

T. G. Kennedy, vice president, Northern Rubber Co., Ltd., Guelph, Ont., is in Europe further developing export markets for his company. He has visited the Scandinavian and some Southern European countries as well as England. He plans to return to Canada early this month.

The I. B. Kleinert Rubber Co., Ltd., Toronto, Ont., manufacturer of rubber dress shields and other specialties, recently removed its manufacturing equipment, office, and showrooms to larger and more convenient quarters at 91 Wellington St. W.

Col. A. E. Massie, formerly manager of the Maritime branch of the Dominion Rubber Co., Ltd., St. John, N. B., has returned to business activity after several months. He has acquired a financial interest in an electrical firm to which he will devote his time.

C. D. P. Rubber Corp., Montreal, P. Q., recently incorporated to manufacture and deal in automobile tires, tubes, and accessories, and all descriptions of rubber goods, etc. Capitalization, $20,000.

Holtite Rubber Co. of Canada, Ltd., Drummondville, P. Q. Aaron Schwartz, manager, industrial department, Southern Canada Power Co., Ltd., recently presided at a dinner given under the auspices of the Holtite Rubber Co. of Canada, Ltd., at the Manoir Drummond, Drummondville. Fifty guests including the mayor of Drummondville attended. Mr. Schwartz praised Mayor Moisan for his active participation in making Drummondville one of the most progressive centers in Quebec province and concluded his remarks by wishing the new Drummondville industry every success. The banquet was preceded by an inspection of the plant, which is fully equipped to produce rubber heels and soles of the same standard of quality as manufactured by the Holtite Mfg. Co., Baltimore, Md., U. S. A.

The Canadian Goodrich Co., Ltd., Kitchener, Ont., reports plenty of action on its Chief Long Lance line, a shoe of the basketball type with a special sole designed by the internationally known Indian athlete. Another feature which has helped win popularity for the shoe, is its last, of the orthopedic type molded to the natural shape of the foot, with a cutaway shank making the shoe very snug around arch and heel.

A. D. Thornton, Montreal, P. Q., of the Montreal Rotary Club, was awarded Rotary International's highest honor, honorary life membership in the world-wide organization, in recognition of his many years of service both to Rotary and its principles and to the community as a whole. Members of the local club at their recent luncheon meeting in the Windsor Hotel unanimously endorsed the appointment and presented Mr. Thornton with an illuminated and framed certificate of membership. Mr. Thornton is well known in the Canadian rubber industry and until his retirement recently was purchasing agent of the Dominion Rubber Co., Ltd., Montreal.

Tucker Duck & Rubber Co., Fort Smith, Ark., U. S. A., has appointed Gordon J. Smeltzer, 437 Gladstone Ave., Toronto, Ont., as Canadian representative.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., has elected Sir Eric Geddes chairman of the board and Sir John George Beharrell to its directorate. For some years past the English and Canadian Dunlop companies have mutually enjoyed the advantages of interchange of formulae and other manufacturing data. Since the acquirement of control by Dunlop, England, of the Canadian company, this relationship has been greatly strengthened. Now, with the election of Sir Eric and Sir John, the two companies are even more closely associated, bringing to the Canadian company the advantages of the related research of seven great Dunlop plants the world around.

Much interest is attached to the prizes given yearly by Dunlop. This year's Dunlop Trophy for the Provincial Amateur Golf Tournaments will be a desk pen set of white marble engraved with the winner's name. For the winners of both the Canadian and Western golf professional championships the award will be solid gold medals engraved with the name of the winner and a record of the event. As in former years any golfer making a hole in one with a Dunlop "Maxfli" will be presented with a serviceable and attractive "Hole-in-One" souvenir ashtray engraved with player's name and particulars.

Goodyear Cotton Co. of Canada, Ltd., St. Hyacinthe, P. Q. Quebec must become a manufacturing province, C. H. Carlisle, president and general manager, Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., asserted at the official opening of the company's new cotton plant at St. Hyacinthe on June 5. The guests included leading citizens of Quebec province, the entire Goodyear Quebec organization, and most of its dealers, who left Montreal in the morning aboard a special train chartered by the company. Groups were made up en route and allotted special guides. On arrival the parties toured the plant, succeeding one another at three-minute intervals and spending approximately three minutes at each operation. Goodyear officers present were: C. H. Carlisle; E. H. Koken, vice president of the Goodyear Cotton Co.; J. P. Goudreault, superintendent; J. G. Lane; treasurer; R. C. Berkinshaw, secretary; P. W. Litchfield, president, and C. C. Slusser, vice president, of The Goodyear Tire & Rubber Co., Inc., Akron, O., U. S. A. Other guests included: D. J. McCarthy, general sales manager, Goodyear Tire & Rubber Co. of Canada, Ltd.; W. J. McNally, manager of the company's Montreal branch; and John D. Mansfield, president, Chrysler Corp. of Canada, Ltd., Walkerville.

The plant now has 499,329 square feet of floor space and over 41,000 spindles. The addition required 160 carloads of machinery. This plant will receive and ship over 700 carloads of material this year. It produces the exclusive Supertwist cords for Goodyear tires, as well as the fabric used in Goodyear hose and belting. It makes over 40 per cent of the value of all materials that go into Goodyear tires. Approximately 800 people are employed of which practically 25 per cent are girls, and the annual payroll approximates $500,000.

Canadian Maufacturers' Association at its recent annual meeting made W. H. Miner, president and general manager, Miner Rubber Co., Ltd., Granby, P. Q., first vice president. R. R. McAulay and Joseph Maton, both of the Miner company also, were elected, re-

spectively, a member of the Municipal Affairs Committee, Quebec Division, and honorary secretary of the Granby, P. Q., branch.

E. C. Martin, sales manager, Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., was recently elected first vice president of the Canadian Export Club of Toronto.

J. W. Green, of the Dominion Rubber Co., Ltd., Montreal, P. Q., at the recent annual meeting was elected to the board of governors of the Canadian Credit Men's Trust Association, Ltd., Quebec Division.

Lee Schoenhair, pilot of the B. F. Goodrich Co.'s plane, "Miss Silvertown," landed last month at the Leaside airport, Toronto, Ont., completing a trip from Hollywood Calif., U. S. A., in near record flying time, to bring a message of greeting and good will from the Governor of New York State to the Shriners' convention at Toronto. Governor Roosevelt's message to Hon. George S. Henry, Minister of Highways and Public Works of Ontario, regretted inability to be present and expressed hearty commendation of the dedication "of the peace monument as a token of the years of peace between the great English-speaking peoples and as a fitting memorial to the memory of those who made the supreme sacrifice to cement this friendship."

Vel-Lom-Tex Art Rug[1]

ONE of the noteworthy extensions of rubber is in the department of fabric floor coverings, especially rugs, runners, and mats for rooms, halls, and porches. The new type of rug stands for the last word in economy for although it has a beautiful soft wool surface that is long wearing, it costs very little more than the so-called hard surface rug.

Basically, the rug known as Vel-Lom-Tex is produced on a needle machine which hooks uncolored and unspun wool into a burlap foundation of suitable width and weight. The artistic design is then printed upon the wool surface in Persian or other designs in selected colors up to six in number.

The printed colors are applied so that they saturate the wool face thoroughly. Thus the design remains intact during the life of the rug. The back of the fabric structure is reenforced by the application of resilient rubber composition applied in the form of a vulcanizable water dispersion. The rubber thus applied not only reenforces the union of the wool surface to the strong burlap foundation but imparts a certain resiliency to the structure and causes the rug to lie flat on the floor. Furthermore it positively prevents the rug from slipping even on a highly polished surface.

These rugs are made 9 by 12 feet in 15 color combinations. Mats of the same construction are 27 by 54 inches, and runners 27 inches wide.

[1] Data from John S. Clement Co., 295 Fifth Ave., New York, N. Y.

Obituary

Prof. W. H. Bristol

AFTER suffering for several months from a blood clot in the region of his heart, on June 18 Professor William Henry Bristol, noted scientist and inventor of the Bristol phone and numerous recording instruments, died in the New Haven, Conn., hospital. He was also president of The Bristol Co., Waterbury, Conn., which he founded in 1899 to manufacture and market his inventions.

Professor Bristol was born on July 5, 1859. In 1884, an M. E., he was graduated from Stevens Institute of Technology. Then followed several years of experience as a teacher. He held many medals awarded him at various expositions for his inventions. He was also a member of many engineering societies and a fellow of the American Association for the Advancement of Science.

Funeral services were held on June 19 at the home of Howard H. Bristol, 561 Hillside Ave., Naugatuck, Conn.

Joseph J. Case

JOSEPH J. CASE, 75, for several years a salesman for the Hamilton Rubber Manufacturing Co., Trenton, N. J., died on June 8 after a brief illness. Mr. Case who was stricken while at work, was removed to his home, 834 Carteret Ave., and appeared to be recovering, but suddenly relapsed and was found dead in bed. He is survived by three sons, Harry E. and E. Paul, of the Luzerne Rubber Co., and Frank D., and a daughter, Jean. The funeral was held at his late home on June 11 with interment in Riverview Cemetery, Trenton.

James R. Robbins

JAMES R. ROBBINS, 34, died at his home, East Nottingham Way, Hamilton Square, N. J., on June 7 after a lengthy illness. Following his return from the World War he entered the employ of the Whitehead Bros. Rubber Co., Trenton, N. J., and was head of the belting department at the time of his death. Surviving him are his parents, a brother, and a sister. Burial was in Greenwood Cemetery, Trenton.

A Dutch Rubber Planter

J. H. MARINUS, the Dutch rubber pioneer, who had endeavored to obtain cooperation between European and native rubber producers in the Dutch East Indies, died suddenly in Batavia last month.

He had completed his investigation of the possibilities of cooperation and had convinced the Governor-General of the D. E. I. that the native producers should not hold aloof from any regulation among European planters. His report on his eastern undertaking is before the Liaison Committee.

Clement Restein

ON MAY 21 in the Hahnemann Hospital, Philadelphia, Pa., died Clement Restein, president of the Belmont Packing & Rubber Co., Inc., 1133 Arch St., Philadelphia, a firm which he organized thirty-seven years ago, establishing an international reputation with his products.

Mr. Restein was born on September 8, 1871. He made his home in Hatboro, Pa. He was a director of the Central National Bank, Philadelphia, and a member of the Manufacturers Club, the Rotary Club, and the Masons.

He is survived by his wife and his brother, who have the sincerest sympathy of the trade in their loss.

Funeral services were held in the Oliver H. Bair Funeral Parlors, Philadelphia.

Coker Fifield Clarkson

FOLLOWING a long illness Coker Fifield Clarkson, secretary and general manager of the Society of Automotive Engineers since 1910, on June 4 died at his home in Scarborough, N. Y. He was born at Des Moines, Iowa, in 1870, and his formal education ended with his graduation from the Harvard School of Law in 1896. Then followed a career successfully devoted to technical, legal, patent, laboratory, and automobile subjects. His going leaves vacant a place that can never fully be refilled in the hearts of those who knew him.

Protection Against Ozone

Scientists have discovered that an atmospheric condition under the hood of the automobile, similar to that caused by a thunder storm when it releases ozone, is sometimes responsible for ignition failure. The trouble is due to what is known as a corona action, an electrical phenomenon that takes place when high voltage is carried by an insulated conductor. This may be seen at night as a purplish glow along the surface of a high-tension line. The chemical action set up by corona around automobile ignition cables or spark plug wires liberates ozone, causing the rapid deterioration of the rubber insulation of the wires.

A new du Pont lacquer has been perfected that fully protects the rubber from the effects not only of ozone but also of oil and gasoline. The exclusion of air by the lacquer guards against oxidation of the rubber, thereby prolonging its life. This especially compounded lacquer is used for finishing the cotton braid surrounding the rubber covering of ignition cables. It is flexible at temperatures as low as zero degree F. and as high as 275 degrees F. It is claimed that when applied to ignition cables of automobiles, the general efficiency of the car increases ten per cent and more.

The Rubber Industry in Europe

GREAT BRITAIN

Tire Imports and Exports

The average annual value of tires and tubes imported into the United Kingdom in the four years 1924 to 1927, was £3,450,000, according to the Imperial Economic Committee's rubber survey. In 1928 imports fell to less than £1,000,000. From 1923 to 1927, exports and imports of tires were approximately balanced. But in 1928 the sharp drop in imports and rise in exports resulted in a favorable balance of £2,452,000. In the following year this became even more marked for imports of tires dropped to £616,000, while exports went up to £4,218,729.

The exports of outer covers for motor vehicles from the principal producing countries for 1924 to 1928 are as follows:

(Thousands of Covers)

	1924	1925	1926	1927	1928
United Kingdom	550	872	904	983	1,047
Canada	500	848	1,152	1,679	1,675
United States.	1,389	1,770	1,654	2,811	2,693
France	1,677	1,872	1,902	2,112	1,812
Italy	667	801	720	726	744
Belgium	86	144	193	296	447
Japan	118	295	138	165	202
Germany	144	175	209	154	180
Totals	5,131	6,777	6,872	8,926	8,000

Figures for France and Japan are estimated on weight, while the 1928 figures for Japan and Italy are estimated on the basis of eleven months' returns. No allowance has been made for the fact that since April 12, 1927, the returns for the United Kingdom exclude tires exported with complete vehicles, chassis, or wheels.

The absorption of crude rubber in the United Kingdom has more than doubled during the last four years, and whereas in 1925 both France and Germany were ahead of it in crude rubber requirements, the United Kingdom is now second only to the U. S. as a rubber absorber.

Prices and Production

Considering the low prices and production, *India Rubber Journal* remarks in a recent issue that the low level of rubber has had surprisingly little influence on the output of the large European-owned planting companies. Returns covering the monthly crops of a number of such companies for the first four months of this year show the following percentages.

	Percentage Increase on 1929			
Companies	Jan.	Feb.	Mar.	Apr.
Malayan	1.65	11.46	3.66	5.73
Java	10.40	6.16	6.23	7.68
Sumatra	4.14	8.53	29.21	18.94
Ceylon	3.21	13.36	7.51	9.74
India and Burma	11.24	15.04*	8.96	7.69
Borneo and Sarawak.	2.43	4.58	1.36*	3.60

* Decreases.

Figures of production and shipments from the Middle East, however, indicate some reduction in output by small holders both in Malaya and in the Dutch East Indies.

It is calculated that in the F. M. S. production of rubber from small holdings under 100 acres during the first four months of this year was 37,866 tons against 38,312 tons for the same period of the preceding year. In Johore the reduction was more marked, 15,635 tons instead of 19,834. The decline in the Johore output is not confined to small native holdings, but also extends to Malayan Asiatic holdings and to European estates.

Shipments of native rubber from the Dutch East Indies in the first quarter of this year came to 23,937 tons against 24,915 tons in 1929. Turning now to Brazil, we find that receipts of rubber at Para were 7,065 tons for the first four months of the year as compared with 9,220 tons to the same date last year. The *India Rubber Journal* concludes its survey with the remark:

"The reduction of crop from the above sources is not yet much to boast about, but as far as it goes, it is slightly encouraging, and the statistics will be well worth watching for the next few months to see whether there is any acceleration of the decline.

Rubber in Auto Construction

To what an extent rubber is being used in automobiles, apart from tires, is disclosed in an inquiry made by Colin Macbeth for the Rubber Growers' Association. Thus the Morris Oxford car uses 23 pounds of manufactured rubber goods per car, not including rubber tires, tubes, and shock absorber bushes. Most of the articles are molded, even the running board mats, which incidentally are much smarter in appearance than sheet matting and at the same time allow the name of the car to be molded into the mat. Then rubber hose is used for the brake connection. This hose must be oil resistant as the "Lockheed" brake system uses oil under pressure, but it was found that rubber tubing was the most suitable material for this purpose. Finally, ten different molded washers are used for the mounting of the engine and gear-box units.

The Rover car uses a rubber rim band with wire wheels to prevent moisture penetrating and damaging the tire fabric. The front wing flap, usually of leather, is here made of rubber. Rubber lamp tube grommets should help to increase the life of the lamp. Other applications of rubber in this car are the change speed lever washer, buffers for seat backs, covers for speedometer heads—used as a noise deadener—thermostat tube and brake rod bushings, and change speed lever covers. The introduction of the Silentbloc bearing resulted in a marked improvement in the insulation of the car from slighter road vibrations and noises.

In all Willys private car models a rubber pad is inserted between the chassis frame and the lower face of the body to give a shock free, insulated, and noiseless mounting for the body. Window rubbers are surfaced with rubber strip and windshields are heavily flanged with rubber, giving perfect waterproof construction. Rubber air piping employed for working the vacuum windshield wiper, is also made of rubber. All electric cables are rubber covered.

In the salon models of this make, rubber tubing covered with upholstery is used for the construction of special draught excluders which run vertically each side of the central door pillars. One of the most interesting and quite unique applications is the use of a pad of sponge rubber fitted on the upper surface of the door window against which the glass window strikes when the latter is fully raised.

Duties on Tringles and Tresses

Whether the "tringles" or circular hoops of woven wire used on ordinary automobile wheels and the "tresses" or mesh used on wheels of heavier vehicles, are component parts of an automobile within the meaning of the Finance Act of 1927 and so liable to pay McKenna duty, was the point at issue before the Court of Appeal here. The Commissioners of Customs appealed from a decision of Justice Macnagten, who held that the Michelin Tire Co., Ltd., of Stoke, was not liable to pay McKenna duty on wires for beads of pneumatic tires. The Court of Appeal, however, was not of the same opinion, and declared that since tringles were imported ready for incorporation in the tire, they were a component part of the tire and were subject to duty, while tresses were made in this country from mesh imported on drums and thus were the raw material out of which a component part was made, and so were free of duty. The appeal was allowed and a declaration made that the tringles were liable to duty on importation.

Rubber Technology Classes

A provisional arrangement of the new courses in Rubber Technology, which it is hoped to inaugurate in September next at the Aston Technical College, Birmingham, has now been arrived at. The course will be of two types:

A. Those suitable for men engaged on the commercial side of the industry and

for operatives who do not require specially detailed knowledge of the technology of rubber manufacture.

B. Technological courses suitable for employes who wish to develop on the management, scientific control, and research sides of the industry.

The commercial course A. is divided into two sections: (1) the manufacture and treatment of rubber; (2) the science of the rubber industry. The course is for one year and will be suitable for men who have had no previous scientific training.

Technological course B. will be of three years' duration, and entrants must have knowledge of chemistry and physics.

First Year. Chemistry, physics, with special reference to the rubber industry, Rubber Technology I.

Second Year. Industrial physics, Rubber Technology II, organic chemistry, mechanical or electrical engineering (optional).

Third Year. Rubber Technology III, business economics or mechanical engineering or chemistry, commercial knowledge or electrical engineering or chemistry.

The standard of the courses will be so designed as to enable students who have completed them to sit for examinations of the Institution of the Rubber Industry, should they wish to do so.

Rubber Conference

The meeting of the Joint Committee of British-Dutch rubber growers in London is scheduled for June 26. Dutch representatives expected are Professor Treub, chairman of the Committee of Dutch Rubber Growers, and Messrs. Swart, De Vries, Enthoven, and Burger, all chairmen of important Dutch rubber plantation companies.

AUSTRIA

During 1929 the imports of crude rubber, gutta percha, and balata into Austria increased from 36,317 to 45,034 quintals. The imports of manufactured rubber goods included: rubber thread, 1,847 quintals, instead of 1,416 quintals; footwear, 5,996 instead of 3,990 quintals; hose, 610 quintals against 471 quintals; packing, 367 against 281 quintals. Tire imports covered casings for automobiles, 9,372 quintals against 9,124 quintals; casings for other vehicles, 1,414 quintals against 1,516 quintals; belting imports were 1,207 against 990 quintals.

On the side of exports, we find casings for automobiles increased from 2,669 to 3,105 quintals; footwear also showed a small increase, from 8,331 to 8,504 quintals; soles and heels, 4,196 instead of 3,877 quintals; hose rose from 2,446 to 2,669 quintals; packing, 7,954 quintals instead of 7,216 quintals; and elastic webbing, 1,285 instead of 1,173 quintals.

In the May issue of *Kunststoffe*, Hans Reif, of Vienna, discusses the rationalization of the Austrian rubber industry. This was first undertaken in regard to factory equipment, which has now been brought up-to-date. In the second place, the stamping of heels and cutting of tire fabric, formerly done by hand, now are done mechanically. Conveyer systems have been introduced, and much thought has been given to saving time and space. Considerable economies have been effected by replacing male with female workers in many departments. However, women work at presses requiring considerable physical effort. Methods of speeding up production and adjusting wages to output have also been successfully worked out.

Besides these measures, the Austrian rubber industry has pursued a policy of cooperation among factories at home and abroad with remarkable success. The rubber cartel, as we may call it, includes every Austrian rubber factory with one exception. In addition, two large factories in Czechoslovakia and one large one in Poland and Jugo-Slavia, respectively, are adherents.

The result of all this has been a considerable increase in output at a great saving of space and labor so that within a short time three factories, one giving employment to 200 persons, became superfluous for the production of rubber and will now be used for other purposes.

GERMANY

Revertex in Packing Mix

In manufacturing packing of asbestos or other materials combined with rubber, attempts have been made to replace naphtha solutions, which are both expensive and highly inflammable, with latex or concentrated latex. In a recent issue of *Gummi-Zeitung* the following mixing employing Revertex is mentioned:

Revertex (corresponds to 100 dry rubber)	130
Barytes	500
Lithopone	50
Sulphur	3
Vulkacite P.	0.2
Oil	20
Casein solution (10 per cent)	10
Sapretin	8
Potassium hydrate	2.5
Total, kilos	723.7
Water	42
Net dry material	681.7

Packing made with this mixing required 5 minutes at 4 atmospheres to cure. Premature vulcanization does not occur because the ultra accelerator does not act until the water evaporates or coagulation has taken place. As long as the latex is present in the form of an emulsion, a mixing containing Thiuram, for instance, would require two hours to cure at 100° C. The addition of the oil serves to give the preparation necessary tackiness even after vulcanization has begun.

New Goods

Where breast feeding and artifical feeding must be alternated or where for some reason bottle feeding must temporarily be resorted to, the child after a while frequently refuses either breast or bottle. With the Pupon nipple this difficulty is obviated since the infant notices no difference and will readily accept either bottle or breast as offered.

The Rheinische Gummi-und Celluloid Fabrik, Mannheim-Neckarau, has put on the market a new mat made of some strong fabric thoroughly impregnated with rubber. The mat is colored on both sides and is absolutely waterproof besides being easy to clean. The surface has been roughened in order to prevent slipping. Unlike sponge rubber mats, it does not soak up water when used in the bathroom. Yet it offers as good a protection against cold floors. The Cellguma mat, as it is called, may be had in a number of different colors and is becoming very popular.

Meeting of the Bunsen Society

The thirty-fifth general meeting of the German Bunsen Society for applied physical chemistry, the leading German association of the kind, took place from May 28 to June 1, 1930, in Heidelberg. The main subject selected for discussion was spectroscopy and the structure of molecules.

RUSSIA

Soviet Planting Fails

The Times correspondent at Riga reports failure of the Soviet plans for planting home-grown rubber. As was reported, a Caoutchouc Trust had been formed by special decree last year after Soviet scientists had experimented for three years in the laboratory with some wild shrubs found growing in the sands of Turkestan. In the spring of this year orders were issued that the new trust should plant 24,710 acres with the newly discovered rubber shrub. It now appears that but 4.9 acres had actually been planted and that the planters are not quite sure whether they have collected the right shrub or a similar one which grows well but yields no rubber.

Professor Bosse, who is held responsible for this state of affairs, explains that there was still much laboratory work to be done when the trust was ordered to begin planting. The process of analysis required that the substances delivered to the laboratory be ground in special mills. But they had no such mills and were obliged to canvass the state food stores for coffee mills. At last a few were found, but the officials refused to lend them for they said:

"We may have coffee again, who knows. And then we shall need our mills."

But this was not all. The planters were likely to plant the wrong wild native shrubs; furthermore, in the professor's absence a plantation he had started with guayule seeds which he had brought back from Mexico, was completely destroyed because the official left in charge, feeling the urge to do some weeding, had taken out all the guayule plants and left a weed which throve well enough but was not a rubber producer.

POLAND

The members of the convention of Polish rubber footwear factories, which was concluded early this year, have decided to organize a central selling bureau. The following firms belong to the convention: Pepege, of Grudziadz; Gentleman and F. W. Schweikert, Lodz; Wedeta, Krosno; Ardal, Lida, and Rygawar, Warsaw.

The Rubber Industry in the Far East

MALAYA

Col. Kunhardt's Views

At present, when the price of rubber, due to over-production, has sunk so low that it can hardly go any lower, when producers are tapping to the limit in order to break even or at least to minimize their loss by reducing costs, and stocks are piling up on all hands, there would seem to be little occasion for speculating about a rubber shortage.

But Lt.-Col. J. C. G. Kunhardt, a well-known figure in the rubber industry, has just written a report, "The Future of Rubber," published by the Rubber Shareholders' Section of the Institution of the Rubber Industry, in which he seeks to prove that due to exhaustion of increasingly large areas of old rubber, a shortage of rubber within the next few years is practically certain.

He contends that the dropping out of production of the oldest rubber has attracted little attention for the percentage of such rubber was small and extensive new plantings more than made up for it. But now the areas of rubber which will be abandoned because of diminishing powers of production and of senility, will show large increases year by year, while the amount of new planting that has been done in recent years will not be sufficient to make good this loss and at the same time meet the ever growing demands from consumers. This applies both to European owned rubber and native rubber, though the latter will reach the stage of senility at a younger age than the former.

Colonel Kunhardt is also inclined to make light of the so-called Dutch native rubber menace. It is, of course, perfectly true that to a large extent the natives are overtapping; at the same time it does not seem to be quite politic to dismiss them off-hand when the latest official report to hand says that in 1929 only part of the mature holdings were exploited since the low rubber prices made it impossible to obtain coolies for the larger as well as the more remote or younger plantations.

While Colonel Kunhardt strives to prove that rubber production will not show a straight line progress, he does assume such progress in the matter of consumption. For the purpose of argument, of course, normal progress in consumption must be assumed, but in view of the fact that practically universal overproduction appears in many lines, can the rate of rubber consumption of the last few years be considered normal?

However, let it be said that the possibility of a rubber shortage is not quite imaginary, but it would be due not so much to the senility of the trees plus increased consumption as to the combination of severe over-tapping and neglect due to the need for economy at present prices. This is bound to undermine the resistance of younger areas and they may become the prey of one of the many diseases to which Hevea is liable.

Rubber Roads Impracticable

Says A. S. Still in the *Straits Budget:* "There has been a good deal of discussion about rubber roads but I have doubts as to whether the salvation of the plantation industry will ever come by reason of local authorities entering upon the vast expenditure which any large extension of such roadways would involve.

"The other day I heard one of the most experienced planters from Malaya expressing his firm belief that a few years hence there will be a grave scarcity of rubber and that the price may run up to 3 or 4 shillings per pound.

"To build roads with rubber at 7½ pence per pound may be practicable. To renew them with rubber at 3 shillings per pound would be ruinous, but which gives the best result, an iron-hard road and universal pneumatics or a rubber road with many solid-tired vehicles?

"I would recognize the scientific evidence in favor of soft surfaced roads, but I am bound to say that noise and vibration is very much less with pneumatic tires running on hard roads than with solid tires running on soft ones.

"There is a far better chance of getting universal pneumatics by heavily taxing vehicles using any other kind of tire than there is of getting rubber roads, and if all the vehicles ran on really good pneumatics, all the available supplies of rubber would be required to shod them.

"I am afraid that a great deal of money has been wasted over rubber road propaganda, for the results have been wholly inconsiderable. Meantime the pneumatic has been making its own way because it saves wear and tear of engines and bodies and is economically expedient.

"For rubber flooring there should be a big future, and it would be wiser to spend on popularizing that than to waste on advocating roads which will never be made."

Further Restriction in View

Since the May tapping holiday has failed to raise prices, the question is, what next? While the government suggestion that tapping be stopped during the two wintering months has not found favor, the stopping of Sunday tapping is widely advocated. The Johore Planters' Association recently voted in favor of a weekly rest day as did the native growers. Whether any scheme will succeed unless it is legally enforced, is questioned by the *Straits Times*, which does not expect much from the tapping holiday and deplores the lack of unanimity shown on all sides. There are still those who preach reduction of costs and increased use as the only remedies for rubber, but others feel that as far as cost reduction is concerned, bedrock has been reached and further economies would sacrifice the health of the estates. The feeling that need exists for government intervention is therefore growing. The Stevenson Scheme has shown what restriction can do, and now that the Dutch are disposed to cooperate with the British, there seems to be no reason why enforced restriction should not be given a new trial, so say some.

Meanwhile the Asiatic rubber producers of Perak have passed a resolution asking the government to declare Sunday a day of rest for all laborers in Malaya. The resolution supports restriction by legislation, which it is suggested might take the form of prohibiting exporting second grade rubber and granting permission to ship only smoked sheet and crepe. It suggests that the government should convene a conference of producers and officials to evolve a scheme to save the industry. If the planters presented a unanimous request to the government to introduce legislation, the government would do so, but there must be unanimity, and this is still sadly lacking.

CEYLON

Tapping Old Rubber to Death

In the *Tropical Agriculturist* of April, 1930, T. H. Holland, manager of the Experiment Station, Peradeniya, warns against tapping to death old trees that are to be cut out later for rejuvenating the area. In 1929 an experiment in rejuvenating old rubber was started here, the area being divided into four plots. In the first three plots the trees are tapped daily to the wood on two cuts on the half circumference one above the other, the bark consumption being arranged so that the bark in Plot 1 would be used up in one year, in Plot 2 in two years, and in Plot 3 in three years. In Plot 4 the bark consumption was arranged for, to be used up in four years, but here tapping is done daily in alternate months with close tapping, but not to the wood. The latter system produced about the same as continuous alternate daily tapping, but is rather more conducive to brown bast.

However, after four months almost a fourth of the cuts in Plots 1, 2, and 3 had gone dry, whereas in Plot 4 only one cut had gone dry. Other experiments proved that the only cause for the rapid drying up of cuts was the daily tapping. It is therefore considered doubtful whether daily tapping can be economically employed.

NETHERLANDS EAST INDIES

O. de Vries Resigns

The well-known rubber scientist, O. de Vries, has resigned the directorship of the Rubber Experiment Station at Buitenzorg, Java, and has left for Holland. As a token of honor, the *Bergcultures*, organ of the Algemeen Landbouw Syndicaat, will devote a special number to the publication of tributes from various sources.

Mr. de Vries is the son of the famous botanist, Hugo de Vries, connected with the University of Amsterdam and known as the founder of the mutation theory. O. de Vries was born in 1881 and studied at the Universities of Leiden and Zurich, receiving his doctorate at Leiden in 1908. In 1909 he went to Java as chemist at the Tobacco Experiment Station at Klaten. In 1915 he was appointed director of the then newly founded Central Rubber Station at Buitenzorg, which in 1926 was reorganized as the Proefstation voor Rubber under the supervision of the Algemeen Landbouw Syndicaat. In the fifteen years of his directorship he published a number of papers recording the results of the research work which he instituted in connection with latex.

On his return from America, a series of papers were issued on the needs of American factories in the matter of packing and of the types of crude rubber employed for most purposes.

In 1929 he was appointed Professor of Chemistry at the University of Batavia (Medical School).

Dutch Rubber Companies

The *Kroniek* publishes the data of 72 Netherlands East Indies rubber companies over the period 1914 to 1928. The writer states that such a compilation must be judged with caution; nevertheless it is possible to draw some important conclusions. The data for 1928 covers about 22 per cent of the total output in the Netherlands East Indies.

The financial results on the whole reflect the tendency of the rubber market, and the results for 1928 show a marked decrease as compared with previous years, thus: 1928, 18,244,000 guilders; 1927, 33,017,000 guilders; 1926, 39,609,000 guilders; and 1926, 37,193,000 guilders. The income from other crops exploited by these companies also showed a decrease in 1928 of almost 1,500,000 guilders. These other crops yielded about 19 per cent of the gross profits of the companies concerned.

In general, cost prices declined during 1928, the amounts written off on concessions and plantations decreased from 8,640,000 to 4,720,000 guilders. This is also true of reserve sums, which dropped about 50 per cent.

The amounts paid out in dividends and bonuses came to 13,000,000 guilders in 1928 as compared with 17,800,000 guilders in 1927 and 25,000,000 in 1926. Many companies in deciding on the percentage to be paid out in dividends in 1928 proceeded with caution, bearing in mind the sharp decline in prices and the bad prospects of the rubber market. Expressed in percentages of the amount of capital issued, the dividends represented 8.3 per cent in 1928 against 10.8 per cent in 1927.

Since 1915 the capital of the companies increased by 90,000,000 guilders and the statutory reserves, by 12,000,000 guilders. However, here it should be remembered that the number of companies in the meantime increased from 40 to 66.

It is noted that owing to the adverse prospects of the rubber market, the majority of the companies have decided not to continue their plans for expansion for the time being.

The financial position of the companies at the end of 1928 was: cash, 47,211,000; debtors, etc., 15,833,000; total, 63,044,000 guilders. Creditors and dividends, 35,895,000 guilders, leaving a surplus of 27,149,000 guilders. In 1927 the surplus was 22,500,000 guilders, so that the companies as a whole were in better position in 1928 than in the preceding year. However, this does not apply to the individual companies; several are in a bad position and will have to meet increasing difficulties as price declines.

Fourth Native Rubber Report

The Fourth Report on Native Rubber Cultivation, by A. Luytjes and Ir. G. C. W. Chr. Tergast, in cooperation with the Central Bureau of Statistics, appeared in the April 4, 1930, issue of *Korte Berichten voor Landbouw, Nyverheid en Handel*, Batavia, Java. Two important points are to be noted in this report: first, that the output will depend on the amount of available labor instead of upon the mature area; and second, that there has been a considerable shifting over from the former *bagidoea* system by which the tapping coolies received half the crop as their pay to the family system of tapping in which the owner and members of his family do the tapping. The importance of this change lies in the fact that where an owner and his family do the tapping and thus save on tapping costs, they can go on tapping at a much lower figure, and the old argument that the natives would have to stop tapping at a price level that would still be remunerative to a large part of the European estates, loses much of its force.

Tapping Hevea Brasiliensis

The figures for native rubber exports bear out this statement, for it appears that, despite unprofitable prices in 1929, total exports were 20 per cent higher than in 1928 and even exceeded 1927 totals by about 8,000 tons. On the other hand, Tapanoeli, West Coast of Sumatra, and Banka show reduced exports as compared to 1927, the reason being that these provinces derive a large part of their income also from coffee, copra, and pepper. The greatest increases were reported from Djambi and South and East districts of Borneo, where too, the population is most dependent on rubber.

The exports in 1929 were 108,500 tons, and the potential exports for 1930 are put at 150,000 tons, but it is not expected that this amount will be reached at present prices. Since the amount of rubber that is expected to reach the tapping stage in the next three years is figured at two to three times the present productive area, and the price factor has prevented this mature area being exploited to the full, a fair rise in price would result in a great increase in production, it is considered.

Detailed figures regarding the exports of native rubber from the outer provinces in 1927, 1928, and 1929 are given below in 1,000 kilos:

(000 omitted)

	1929		1928		1927	
Provinces	Dry Equivalent	Per Cent	Dry Equivalent	Per Cent	Dry Equivalent	Per Cent
East Coast Sumatra	14,415	66.8	13,236	68.0	24,485	70
Atjeh	522	84.5	426	84.8		
Tapanoeli	3,082	94.5	2,236	91.5	3,563	74
Duty free	219		432		.....	..
West Coast Sumatra	788	84.9	574	84.0	1,093	85
Riouw, Indragiri	8,062	88.3	7,194	87.0	7,787	85
Free Zone	250	66.6	672	66.6	101	65
Djambi	22,808	72.4	19,610	58.9	19,630	50
Palembang	15,686	70.6	12,509	69.8	15,082	68
Benkoelen	.....	....	3	75.0	23	85
Lampongs	1	65.0	.....	....	6	65
Banka	714	83.1	480	70.7	1,255	65
Billiton	113	89.7	94	80.3	115	65
West Borneo	19,937	77.9	16,648	79.1	18,895	75
Southeast Borneo	21,429	75.2	17,239	71.9	18,455	70
Total	108,026	74.6	91,353	70.4	110,490	66

Rubber Patents, Trade Marks and Designs

Machinery

United States

1,755,933.* **Tire Band Folder.** This is a band-folding apparatus for doubling a wide band or tube of flexible material over upon another portion as in the making of a pneumatic inner tube, a bead flipper, or a flat or semi-flat pneumatic tire band. F. B. Pfeiffer, Akron, assignor to Seiberling Rubber Co., Barberton, both in O.

1,756,171.* **Thread Cutter.** Rubber thread is cut by this device from cylindrical or tubular cured rubber stock, either hollow or solid, to be used particularly for the winding of golf balls, etc. F. W. Bommer, Everett, Mass.

1,756,172.* **Thread Cutter.** Rubber thread is cut from cured tubular stock drawn over a special cutting mandrel provided with helical grooves. It is adapted to be rotated but is immovable longitudinally. Other structural features provide for spooling the thread so that it will not jam or break during unwinding. F. W. Bommer, Everett, Mass.

1,756,452.* **Pressing Machine.** The foxing strip is applied to rubber shoes with a uniform and normal pressure simultaneously throughout its entire length and width to obtain good adhesion of the foxing to the shoe. E. E. Clements, assignor to L. Candee & Co., both of New Haven, Conn.

1,757,128.* **Mandrel Cementing Machine.** In this apparatus a number of mandrels may receive successively bands of cement adjacent to their ends. The machine supplies dried cemented mandrels for use in tube building. C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,757,750.* **Expanding Machine.** The function of this machine is to expand rubberized fabric power transmission endless belts to eliminate from them the tendency to elongate in service. The mechanism also transfers the stretched belts or bands to a mold ring to maintain them in stretched condition during vulcanization. H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,757,935.* **Fabric Feeding Device.** Rolls of rubberized fabric are manipulated to facilitate unwinding when wound within convolutions of a non-adhesive protective liner. E. F. Maas, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,758,409.* **Bead Cutter.** It removes both beads simultaneously from a pneumatic tire by a number of revolving cutters under single manual control. H. Reichel, Chicago, Ill.

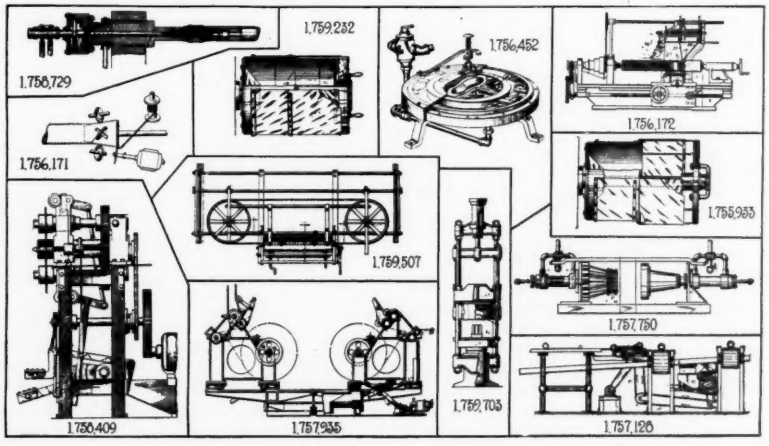
1,758,729.* **Cutter for Tubular Articles.** This provides a rotatable expanding mandrel and a cutting tool holder on a bed beneath. The tube to be cut is locally distended on the expansible mandrel and is severed in that region by applying the blade of the cutting tool. G. F. Wilson, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,759,232.* **Band Folder.** This reverses or folds over upon itself a band of material for the purpose of making an endless tube as in the case of a laminated band for a pneumatic tire casing. J. R. Gammeter, Akron, O.

1,759,507.* **Tire Patch Cutter.** One or more plies of fabric are severed from a used tire casing by an endless band knife. The resulting patch material has a comparatively smooth surface well adapted for adhesion in the repair of a tire casing. P. E. Hawkinson, assignor to Kehawke Mfg. Co., both of Minneapolis, Minn.

1,759,703.* **Battery Box Press.** A hydraulic press is designed to produce battery boxes from plastic material with less breakage than is commonly experienced. J. A. Lindenborg, Indianapolis, Ind., assignor, by mesne assignments, to Battery Containers, Inc., Boston, Mass.

* Pictured in group illustration.



1,755,246. **Lasting Jack.** H. G. Ellis, Waltham, assignor, by mesne assignments, to Hood Rubber Co., Inc., Watertown, both in Mass.

1,755,248. **Boot Tree.** J. H. Flink, assignor, by mesne assignments, to Hood Rubber Co., Inc., both of Watertown, Mass.

1,755,563. **Inner Tube Vulcanizer.** E. Schnedarek, assignor, by mesne assignments, to National Rubber Machinery Co., both of Akron, O.

1,755,926. **Marginal Strip Applying Device.** C. W. Leguillon and J. R. Gammeter, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,755,981. **Vulcanizer.** P. De Mattia, Passaic, N. J., assignor, by mesne assignments, to National Rubber Machinery Co., Akron, O.

1,756,058. **Tube Vulcanizer.** A. J. Fleiter, Akron, H. C. Bostwick, Kenmore, and T. A. Miller, assignors to Akron Standard Mold Co., both of Akron, all in O.

1,756,059. **Rubber Plying-Up Device.** C. L. Foutz, assignor to G & J Tire Co., both of Indianapolis, Ind.

1,756,265 and 1,756,266. **Mold.** W. P. Voth, assignor to Akron Standard Mold Co., both of Akron, O.

1,756,327. **Bead Setting Ring.** F. L. Allensworth, assignor to Miller Rubber Co., both of Akron, O.

1,756,438. **Shoe Part Assembler.** C. M. Richardson, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,756,529. **Tire Band Treater.** A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.

1,756,826. **Trimmer.** P. R. Hoopes, Hartford, Conn., assignor to Essex Rubber Co., Trenton, N. J.

1,757,053. **Rubber Curing Device.** H. R. Minor, Ossining, N. Y., assignor, by mesne assignments, to Liquid Carbonic Corp., a corporation of Del.

1,757,105. **Tire Builder.** G. F. Wikle, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.

1,757,113. **Tire Finisher.** C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,757,127. **Tire Trimmer.** C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,757,376. **Tire Mold.** L. A. Laursen, Eau Claire, Wis., assignor of one-fourth to P. L. Laursen, Akron, O.

1,757,624. **Repair Vulcanizer.** L. O. Grange, assignor to W. J. Jarratt, both of Chicago, Ill.

1,757,635. **Vulcanizer.** W. J. Jarratt and F. E. Hartman, both of Chicago, Ill.

1,757,636. **Weftless Fabric Device.** A. E. Jury, Rutherford, N. J., assignor to Morgan & Wright, Detroit, Mich.

1,757,732. **Tube Mandrel Conveyer.** M. H. Pade, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,757,931. **Humidity Control Apparatus.** H. A. Brittain, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,757,934. **Centrifugal Tire Former.** E. F. Maas, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,757,994. **Flange Mold.** L. C. Emmerich, New York, N. Y.

1,758,410. **Shingle Strip Machine.** H. Reichel, Chicago, Ill.

1,758,688. **Testing Machine.** J. A. Cowley, Springfield, assignor to B. F. Perkins & Son, Inc., Holyoke, both in Mass.

1,759,052. **Tire Spreader.** A. C. Hopkins, assignor to National-Standard Co., both of Niles, Mich.

1,759,618. **Article Making Device.** E. Hopkinson, New York, and W. A. Gibbons, Little Neck, assignors to General Rubber Co., New York, all in N. Y.

1,759,668. **Multiple Fabric Machine.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,759,669. **Tire Bead Builder.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,759,681. **Airbag Inserter.** W. H. Bines, Akron, and W. A. Corlett, Kenmore, assignors to Firestone Tire & Rubber Co., Akron, all in O.

1,759,713. **Tire Expander.** R. V. Ritchey, assignor to Firestone Tire & Rubber Co., both of Akron, O.

Dominion of Canada

299,951. **Web Guiding Apparatus.** Goodyear Tire & Rubber Co., assignee of R. S. Kirk, both of Akron, O., U. S. A.

299,957. **Pneumatic Tire Builder.** Goodyear Tire & Rubber Co., assignee of J. C. Warden, both of Akron, O., U. S. A.

299,958. **Tire Flap Builder.** Goodyear Tire & Rubber Co., assignee of H. M. Brown, both of Akron, O., U. S. A.

299,959. **Endless Belt Machine.** Goodyear Tire & Rubber Co., assignee of C. J. Burkley and E. G. Kimmich, all of Akron, O., U. S. A.

299,960. **Cord Belt Builder.** Goodyear Tire & Rubber Co., assignee of W. H. Gerstenslager, both of Akron, O., U. S. A.

299,961. **Flipping Covers on Belts.** Goodyear Tire & Rubber Co., assignee of J. A. Shively, both of Akron, O., U. S. A.

299,962. **Tire Machine.** Goodyear Tire & Rubber Co., assignee of W. C. State, both of Akron, O., U. S. A.

299,964. **Article Making Device.** Goodyear Tire & Rubber Co., assignee of B. W. Rowland, both of Akron, O., U. S. A.

300,142. **Cementing Machine.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. R. Polleys, New Haven, Conn., U. S. A.

300,143. **Footwear Presser.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. R. Polleys, New Haven, Conn., U. S. A.

300,144. **Latex Applier.** Dominion Rub-Rubber Co., Ltd., Montreal, P. Q., assignee of H. R. Polleys, New Haven, Conn., U. S. A.

300,145. **Shoe Presser.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. E. Clements, New Haven, Conn., U. S. A.

300,263. **Tire Vulcanizer.** O. D. Hollenbeck, Barberton, O., and T. S. Caldwell, Denver, Colo., both in the U. S. A.

300,375. **Footwear Assembling Conveyer.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. H. Clark, Reading, Mass., U. S. A.

300,376. **Upper Pressing Machine.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. E. Clements, New Haven, Conn., U. S. A.

300,377. **Footwear Assembling Conveyer.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. L. Patten, New Haven, Conn., U. S. A.

United Kingdom

326,288. **Tire Mold.** E. Hopkinson, New York, N. Y., U. S. A.

326,291. **Football Bladder Mold.** Dunlop Rubber Co., Ltd., London, and G. W. Trobridge, Fort Dunlop, Birmingham.

326,496. **Tube Machine.** Dunlop Rubber Co., Ltd., London, C. Hayes and E. A. Murphy, both of Fort Dunlop, Birmingham.

326,651. **Tire Tester.** Dunlop Rubber Co., Ltd., London, H. Willshaw and F. G. Broadbent, both of Fort Dunlop, Birmingham.

Germany

499,021. **Air-filled Core Remover.** Goodyear Tire & Rubber Co., Akron, O., U. S. A. Represented by R. H. Koen, Berlin S. W. 11.

499,308. **Solvent Recovery Apparatus.** Hermann & Alfred Escher A. G., Chemnitz.

Designs

1,116,050. **Heel Vulcanizing Mold.** Firma Gust. Rafflenbeul, Schwelm i. W.

1,116,619. **Vulcanizing Apparatus.** F. Niemeyer, Brink vor Hannover.

1,117,147. **Machine Guard.** H. Dietzel, Hannover.

1,118,159. **Vulcanizing Apparatus.** L. Weber, Berlin N. 65.

1,118,250. **Vulcanizing Apparatus.** A. A. Stamboise, London, England. Represented by M. Herzfeld, Dusseldorf.

1,118,546. **Mold.** E. Rauschert, Hüttengrund-Hüttensteinach i. Thur.

1,119,801. **Device for Applying Stripes.** Dunlop Rubber Co., Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn and E. Noll, both of Berlin S. W. 11.

Process

United States

1,756,011. **Asphalt Biscuits.** A. A. Glidden, Watertown, and A. R. Lukens, Belmont, assignors, by mesne assignments, to Hood Rubber Co., Inc., Watertown, all in Mass.

1,756,355. **Preparing Cord Fabric.** K. T. Henderson, assignor to Miller Rubber Co., both of Akron, O.

1,756,474. **Footwear.** H. A. Raymond, Somerville, assignor to American Rubber Co., E. Cambridge, both in Mass.

1,757,928. **Forming Articles.** B. W. Rowland, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,758,438. **Boot with Extension Top.** A. A. Glidden and T. M. Knowland, both of Watertown, Mass., assignors, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,759,124. **Sealing Tape.** J. MacLaurin, Ware, Mass.

1,759,685. **Applying Rubber to Another Article.** F. F. Brucker, assignor to Miller Rubber Co., both of Akron, O.

Dominion of Canada

299,655. **Pneumatic Tire.** J. R. Gammeter, Akron, O., U. S. A.

299,981. **Molded Brake Lining.** Raybestos-Manhattan, Inc., assignee of Manhattan Rubber Mfg. Co., both of Passaic, N. J., assignee of H. Albert, New York, N. Y., and A. Whitelaw, Passaic, N. J., all in the U. S. A.

300,916 and 300,238. **Producing Inflatable Bodies.** Dr. Dorogi es Tarsa Gummigyar R. T., Budapest-Albertfalva, assignee of half interest of L. and I. Dorogi, both of Budapest, all in Hungary.

United Kingdom

325,916. **Coating Threads and Cords.** C. H. Gray, London.

Germany

499,183. **Footwear.** Harburger Gummiwaren-Fabrik Phoenix A. G., Wilhelmsbuerg, Harburg a. d. E.

499,900. **Waterproof Ball Cover.** Chas. Macintosh & Co., Ltd., Manchester, England. Represented by R. and M. M. Wirth, C. Weihe, H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn and E. Noll, both of Berlin S. W. 11.

Chemical

United States

1,755,379. **Concentrating Latex.** H. W. Banks, 3d, Noroton, Conn., assignor, by mesne assignments, to United States Rubber Co., a corporation of N. J.

1,755,703. **Rubber Treatment.** P. I. Murrill, Plainfield, N. J., and W. W. Evans, New Rochelle, assignors to R. T. Vanderbilt Co., Inc., New York, both in N. Y.

1,755,890, 1,755,891, and 1,755,892. **Aqueous Rubber Emulsions and Dispersions.** W. B. Pratt, Wellesley, Mass., assignor, by mesne assignments, to Dispersions Process, Inc., Dover, Del.

1,756,035. **Paper and Rubber Combinations.** R. P. Rose, Jackson Heights, and H. E. Cude, Floral Park, assignors to General Rubber Co., New York, all in N. Y.

1,756,152. **Cosmetic.** T. Hashimoto, Tokyo, Japan.

1,756,310. **Accelerator.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,756,315. **Accelerator.** W. P. Ter Horst, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,756,411. **Dry Molding.** W. B. Wescott, assignor to Rubber Latex Research Corp., both of Boston, Mass.

1,756,817. **Rubbery Sulphur Plastic.** C. Ellis and J. V. Meigs, assignors, by mesne assignments, to C. Ellis, both of Montclair, N. J.

1,756,943. **Artificial Compositions Resembling Rubber.** W. Frankenburger and C. Steigerwald, both of Ludwigshafen-on-the-Rhine, assignors to I. G. Farbenindustrie A. G., Frankfort-on-the-Main, all in Germany.

1,757,632. **Latex Treatment.** E. Hazell, New York, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,757,930. **Accelerator.** J. Teppema, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,757,944 and 1,757,945. **Accelerators.** L. B. Sebrell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,758,151. **Composition.** N. Goodwin, Los Angeles, Calif., assignor, by mesne assignments, to Delano Land Co., a corporation of Calif.

1,758,420. **Metal Coating.** F. Ahrens, Bockenem-on-the-Harz, assignor of one-half to Harzer Achsenwerke, G. m. b. H., Bornum-on-the-Harz, both in Germany.

1,758,616. **Recovery of Quebrachitol.** J. McGavack, Jackson Heights, and G. B. Binmore, Long Island City, both in N. Y., assignors to Naugatuck Chemical Co., Naugatuck, Conn.

1,758,913 and 1,758,914. **Road Building Material.** S. S. Sadtler, Springfield Township, Pa., assignor to Amiesite Asphalt Co. of America, Camden, N. J.

1,759,017. **Reclaiming Rubber.** G. J. Miller, Douglas, Ariz.

Dominion of Canada

299,952 and 299,953. **Accelerator.** Goodyear Tire & Rubber Co., assignee of J. Teppema, both of Akron, O., U. S. A.

299,954. **Uniting Rubber to Metal.** Goodyear Tire & Rubber Co., Akron, O., assignee of S. S. Kurtz, Jr., Philadelphia, Pa., both in the U. S. A.

299,963. **Treating Rubber.** Goodyear Tire & Rubber Co., Akron, O., assignee of H. A. Bruson, Philadelphia, Pa., both in the U. S. A.

299,965. **Accelerator.** Goodyear Tire & Rubber Co., assignee of J. Teppema and L. B. Sebrell, all of Akron, O., U. S. A.

300,002. **Rubber Compound.** H. H. Beckwith, Brookline, assignee of F. O. Woodruff, Quincy, both in Mass., U. S. A.

300,147. **Treating Coated Fabrics.** E. I. du Pont de Nemours & Co., Wilmington, Del., assignee of M. N. Nickowitz, Fairfield, Conn., both in the U. S. A.

300,374. **Rubber Manufacture.** Dewey & Almy Chemical Co., assignee of D. M. Stevens, both of Cambridge, Mass., U. S. A., and E. A. Hauser, Frankfort-on-the-Main, Germany.

United Kingdom

325,645. **Waterproof Fabric.** Regensburger & Co., Komm. Ges., Kurfurstendamm, Berlin, Germany.

325,831. **Synthetic Rubber.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

325,967. **Rubber Colors.** I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

326,202. **Resilient Tires.** I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

326,210. **Latex Preservation.** Dunlop Rubber Co., Ltd., London, W. H. Chapman, D. W. Pounder, E. A. Murphy, and F. T. Purkis, all of Fort Dunlop.

326,216. **Paints.** H. E. Potts, Liverpool. (H. Plauson, Hamburg, Germany.)

326,256. **Accelerator.** S. J. Peachey, Hampstead, London.

326,259. **Compound Transparent Sheets.** Triplex Safety Glass Co., Ltd., London, and J. Wilson, King's Norton, Birmingham.

326,282. **Treating Latex.** Dunlop Rubber Co., Ltd., London, D. F. Twiss, E. A. Murphy, and W. G. Thorpe, all of Fort Dunlop.

326,292. **Molding by Dipping.** Dunlop Rubber Co., Ltd., London, and G. W. Trobridge, Fort Dunlop.

326,481. **Hardening Gutta Percha.** W. S. Smith, Benchams, Devonshire; H. J. Garnett, Lymne, Sevenoaks, and J. N. Dean, Orpington, both in Kent.

326,497. **Goods from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, W. H. Chapman and D. W. Pounder, both of Fort Dunlop.

326,516. **Colloidal Dispersions.** Imperial Chemical Industries, Ltd., Millbank, London, A. J. Hailwood, A. Shepherdson, and A. Stewart, all of Crumpsall Vale Chemical Works, Blackley, Manchester.

326,523. **Accelerator.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

326,525. **Accelerator.** Clayton Aniline Co., Ltd., Clayton, and H. Fritzsche, West Didsbury, both in Manchester.

326,566. **Cable Insulation.** W. S. Smith, Benchams, Devonshire; H. J. Garnett, Lymne, Sevenoaks, Kent; H. C. Channon, Kensington, London; and J. N. Dean, Orpington, Kent.

326,649. **Paint.** G. B. Ellis, London. (M. Rensch, Charlottenburg, Berlin, Germany.)

Germany

497,477. **Vulcanizing Rubber.** Chemische Fabrik Kalk G. m. b. H. and H. Oehme, both of Koln-Kalk.

498,390. **Lamp Black Mixings.** Runge-Werke A. G., Berlin-Spandau.

General

United States

17,662 (Reissue). **Tire Valve.** C. J. Spill, Freeport, assignor to A. Schrader's Son, Inc., Brooklyn, both in N. Y.

1,755,205. **Pneumatic Mattress.** J. A. Christensen, Omaha, Nebr.

1,755,288. **Doorcheck.** F. K. Eastman, assignor to Concealed Door Check Co., both of Kokomo, Ind.

1,755,387. **Shaft Protector. H.** Christophersen, E. Orange, N. J., assignor to Revere Rubber Co., Chelsea, Mass.

1,755,443. **Upright Highway Marker.** M. E. Hartzler, Downers Grove, and E. P. Romilly, Chicago, both in Ill.

1,755,549. **Marine Propulsion Cushioning.** A. F. Masury, New York, N. Y., assignor, by mesne assignments, to Rubber Shock Insulator Corp., Wilmington, Del.

1,755,568. **Arch Support.** H. Sochor, Zurich-Hongg, Switzerland.

1,755,586. **Fountain Pen.** E. C. Berry, Melrose, assignor to Chilton Pen Co., Boston, both in Mass.

1,755,687. **Weather Strip.** W. J. Dennis, Chicago, Ill.

1,755,787. **Elastic Woven Fabric.** T. F. Moore, assignor to George C. Moore Co., both of Westerly, R. I.

1,755,930. **Power Cable.** W. I. Middleton, Watertown, assignor to Simplex Wire & Cable Co., Boston, both in Mass.

1,756,038. **Suitcase Strap.** B. H. Shwayder, assignor to Shwayder Trunk & Mfg. Co., both of Denver, Colo.

1,756,039. **Ice Cream Shipper.** S. O. Staake, assignor of one-half to R. W. Hutchens, both of Eau Claire, Wis.

1,756,056. **Inflatable Ball.** J. E. Dorward, New York, N. Y.

1,756,069. **Breaker Fabric.** W. K. Sawyer, assignor to Morgan & Wright, both of Detroit, Mich.

1,756,107. **Heel Pad.** T. Tanigawa, assignor of one-half to F. K. Makino, both of Honolulu, Territory of Hawaii.

1,756,183. **Inner Tube Patch.** C. E. Dunlap, Sioux City, Iowa.

1,756,273. **Tire Signal Cap.** F. Y. Wynkoop, Denver, Colo.

1,756,378. **Condenser Tube Cleaner.** W. F. Oberhuber, E. Lansdowne, Pa.

1,756,380. **Mat.** G. S. Osborn, Hartford, Conn.

1,756,383. **Swimming Tube.** W. B. Petz, Plymouth, Mich.

1,756,456. **Heel.** W. E. Forrester, Baltimore, Md.

1,756,513. **Typewriter Platen.** W. F. Helmond, Hartford, Conn., assignor to Underwood Elliott Fisher Co., New York, N. Y.

1,756,665. **Tire and Rim Construction.** A. H. Shoemaker, Seattle, Wash.

1,756,698. **Gasoline Hose.** J. M. Oden, Brooklyn, N. Y.

1,756,713. **Soap Dish.** W. Vernet, New York, N. Y.

1,756,837. **Hair Waving Device.** W. G. Shelton, St. Louis, Mo.

1,757,019. **Athletic Protector.** G. E. Mott, Malden, Mass., assignor to W. W. Burns, Washington, D. C.

1,757,049. **Electric Cable.** G. A. Johnson, Irvington, N. J., assignor to American Metal Molding Co., a corporation of N. J.

1,757,111. **Kite Balloon Protector.** A. Crossley, Washington, D. C., assignor, by mesne assignments, to Federal Telegraph Co., a corporation of Calif.

1,757,135. **Vacuum Cup Energizer.** E. H. Odell, Chicago, Ill.

1,757,575. **Laborers' Shoe.** S. Ishibashi, Kurume, Fukuoka Ken, Japan.

1,757,594. **Repaired Last.** W. J. Shaw, assignor to New England Wood Heel Co., both of Haverhill, Mass.

1,757,633. **Spring Cover.** D. E. Hennessy, Cambridge, assignor of sixty per cent to Lewis-Shepard Co., Watertown, both in Mass.

1,757,717. **Insulated Cable.** J. Johnston, New Haven, Conn., assignor to Western Electric Co., Inc., New York, N. Y.

1,757,754. **Antisplash Tire.** H. Waterfall, New York, N. Y.

1,758,011. **Golf Ball Washer.** W. F. Reach, Springfield, Mass., assignor to A. G. Spalding & Bros., New York, N. Y.

1,758,024. **Hot Water Bottle.** J. K. Blomquist, Berkeley, Calif.

1,758,053. **Laminated Sheet Material.** K. L. Moses, Brookline, Mass.

1,758,107. **Spring Shackle.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,758,289. **Bathing Appliance.** J. W. Loy, Long Beach, Calif.

1,758,353. **Tire Structure.** F. C. Cave, Des Moines, Iowa.

1,758,396. **Automobile Body.** O. J. Groehn, Grosse Pointe Park, assignor to Hudson Motor Car Co., Detroit, both in Mich.

1,758,610. **Adhesive Backing.** L. G. Lange, Passaic, N. J.

1,758,625. **Air Valve.** S. Saul, Aachen, Germany.

1,758,712. **Anti-Rattling Bushing.** F. C. Morris, San Francisco, Calif.

1,758,962. **Massaging Device.** C. Miller, San Francisco, Calif.

1,759,336. **Life-Saving Belt.** J. S. Wollk, New York, N. Y.

1,759,348. **Bathtub Cushion and Mat.** M. Fishman, Detroit, Mich.

1,759,358. **Resilient Vehicle Wheel.** W. E. Lacey, Isleton, Calif.

1,759,362. **Tire Alarm Valve.** C. J. Mosher, assignor of forty-nine per cent to S. C. Taylor, both of Seattle, Wash.

1,759,377. **Automobile Brake.** H. D. Tappan, Philadelphia, Pa.

1,759,398. **Egg Holder.** M. Hart, Vancouver, Wash.

1,759,410. **Pneumatic Tire.** H. B. Marston, Philadelphia, Pa.

1,759,449. **Spring Shackle.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,759,496 and 1,759,497. **Covered Elastic Cord.** E. Weintraub, Brooklyn, N. Y.

1,759,568. **Nipple.** C. Fervers, Cologne-on-the-Rhine, Germany.

1,759,583. **Lady's Boot.** F. J. Martin, assignor to Johnson-Stephens & Shinkle Shoe Co., both of St. Louis, Mo.

1,759,590. **Skidless Tire.** L. G. Peters, New York, N. Y.

1,759,602. **Puncture-Proof Inner Tube.** W. J. Aschenbach, E. Orange, N. J.

1,759,637. **Life-Saving Belt.** J. S. Wollk, New York, N. Y.

1,759,711. **Swimming Appliance.** O. I. Price, Frederick, Md.

1,759,722. **Multiple Leaf Spring.** J. W. Watson, Wayne, Pa.

1,759,796. **Tire Safety Valve.** A. R. Miles, Indianapolis, Ind.

Dominion of Canada

299,625. **Necktie.** M. Halpern, Bronx, and W. Mayer, Brooklyn, co-inventors, both in N. Y., U. S. A.

299,627. **Traffic Signal.** J. and H. Rank, co-inventors, both of Minneapolis, Minn., U. S. A.

299,691. **Gumming and Transport System.** J. S. Stoke, Huntingdon Valley, Pa., U. S. A.

299,824. **Tire Casing Reliner.** S. Armata, Goose Creek, Tex., U. S. A.

299,983. **Hot Water Bottle.** Seiberling Latex Products Co., assignee of C. P. Whisler, both of Akron, O., U. S. A.

300,035. **Pneumatic Mattress. J. A.** Christensen, Omaha, Nebr., U. S. A.

300,073. **Sink Strainer.** M. L. O'Connor, Chatham, Ont.

300,133. **Motor Mounting.** Chrysler Corp., assignee of R. K. Lee, both of Detroit, Mich., U. S. A.

300,179. **Overshoe.** Miller Rubber Co., assignee of R. E. Riley, both of Akron, O., U. S. A.

300,272. **Spring Shackle Anti-Rattle.** H. E. Blomgren, Brooklyn, N. Y., U. S. A.

300,273. **Auto Spring Connection.** H. E. Blomgren, Brooklyn, N. Y., U. S. A.

300,289 and 300,290. **Shoe.** J. F. Gilkerson, Milwaukee, Wis., U. S. A.

300,291. **Vehicle Vibration Absorber.** R. T. Glascodine, London, S. W. 1, England.

300,294. **Tire Valve.** H. Hasting, Detroit, Mich., U. S. A.

300,433. **Draft Gear Blow Cushion.** Waugh Equipment Co., Chicago, Ill., assignee of L. M. Clark, Depew, N. Y., both in the U. S. A.

300,434. **Draft Gear Cushioning.** Waugh Equipment Co., Chicago, Ill., assignee of H. D. Page and L. M. Clark, both of Depew, N. Y., all in the U. S. A.

300,435. **Spring Plank Cushion.** Waugh Equipment Co., assignee of R. J. O'Brien, both of Depew, N. Y., U. S. A.

300,436. **Journal Cushion.** Waugh Equipment Co., assignee of R. J. O'Brien, both of Depew, N. Y., U. S. A.

United Kingdom

325,459. **Sliding Clasp Fastener.** F. Waschiczeck and O. and R. Schubert, (trading as O. Schubert & Sohn), all in Naumburg, Saale, Germany.

325,599. **Ball.** India Rubber, Gutta Percha & Telegraph Works Co., Ltd., and W. J. Perry of India Rubber, Gutta Percha & Telegraph Works Co., Silvertown, both in London.

325,656. **Spring Supports.** F. L. Morgan, Coventry.

325,719. **Air Tubes for Tires.** E. May, Turlough, Castlebar, Co. Mayo, Ireland.

325,748. **Boot Protector.** P. Lee, Windsor, Ont., Canada.

325,806. **Gramophone.** W. Loveless, New Malden, Surrey, A. A. Hunter, Wanstead, and G. Bradley, Peckham, both in London.

325,868. **Electrostatic Sound Reproducer.** C. Kyle, Geneva, Ill., U. S. A.

325,871. **Brassiere.** F. C. Jones, Paddington, London.

325,927. **Buoyant Fabric.** J. P. S. Smith, Oxton, and H. T. Tomkins, Rock Ferry, both in Cheshire.

326,066. **Bridle.** G. Marshall, Hill Court, Cheltenham.

326,083. **Electric Hand Lamp. E.** Rademacher, Dusseldorf, Germany.

326,086. **Washing Plunger.** E. McCauley, New York, N. Y., U. S. A.

326,206. **Motor Vehicle Mounting. A.** G. Grice, Caversham, Reading.

326,131. **Electrostatic Sound Reproducer.** C. Kyle, Geneva, Ill., U. S. A.

326,242. **Fountain Pen.** G. Sweetser, Upper Norwood, London.

326,254. **Billiard Table.** J. McLellan, Glenluffin, Colvend, Dalbeattie, Kirkcudbright.

326,261. **Tire Air Valve.** E. B. Killen, London.

326,272. **Gramophone Pickup. P. K.** Turner and E. H. Robinson, both of St. Andrew's Works, Slough.

326,376. **Springs.** A. Spencer, Westminster.

326,379. **Photographic Printing Frame.** R. V. Boardman, E. Ham, London.

326,420. **Collapsible Boat.** F. Scheibert, Lübben, Germany.

326,554. **Automobile Top.** E. J. Newns, Thames Ditton, Surrey.

326,602. **Electrostatic Sound Reproducer.** United Reproducers Patents Corp., St. Charles, Ill., U. S. A.

326,627. **Tire.** J. Spyker, Amsterdam, Holland.

326,683. **Collapsible Tube Closure.** F. W. Ellyson, St. Pölten, Upper Austria.

Germany

497,724. **Wheel.** Hatfield Resilient Wheel Co., Baltimore, Md., U. S. A. Represented by B. Kugelmann, Berlin S. W. 11.

498,723. **Closing for Containers, Tubes, Etc.** R. Creuzburg, Dresden-A.

498,782. **Rubber-Framed Vehicle Door and Window-Posts.** P. G. Ehrhardt, Frankfurt a. M.

499,683. **Conveyer Belt.** Continental Gummi-Werke A. G., Hannover.

Designs

1,113,944. **Hand Cart Wheel. S.** Servera, Barcelona, Spain. Represented by A. Levy and F. Heinemann, both of Berlin S. W. 11.

1,114,058. **Joker Ball.** W. Jung, Greiz.

1,114,225. **Solid Rubber Cover.** Carl Hisgen A. G., Worms & Julius Fochtenberger, Munich.

1,114,519. **Floor Covering.** Continental Gummi-Werke A. G., Hannover.

1,114,589. **Ladder Antiskid.** Norddeutsche Gummiwaren-Fabrik Hannover, G. m. b. H., Hannover-Dohren.

1,114,931. **Inflatable Quadruped.** Ungarische Gummiwarenfabriks A. G., Budapest, Hungary. Represented by W. Fritze, Berlin S. W. 61.

1,115,081. **Footwear Inserts.** O. David, Breslau 23.

1,115,172. **Rubber Insert Mattress.** Marienburger Stepdecken & Wattenfabrik, E. Solmsen, Marienburg i., Westpr.

1,115,213. **Bathing Cap.** Flugel & Polter, Leipzig, W. 31.

1,115,329. **Joker With Voice.** M. Retemeyer Nachf., Berlin S. O. 16.

1,115,605. **Fabric Scrubber.** M. Ruschig, Freitel-Po.

1,115,606. **Washboard.** M. Ruschig, Freital-Po.

1,115,630. **Sandwich.** K. J. Bruhn, Hamburg 11.

1,115,648. **Rubber Roll.** Firma Albin Seckendorf, Markneukirchen.

1,115,692 and 1,115,693. **Nonskid Tire.** Continental Gummi-Werke A. G., Hannover.

1,115,749. **Insert for Shoes.** S. Rudau and L. Zatorski, both of Dortmund.

1,115,817. **Heel.** W. P. Krzensk, Ortelsburg, Ostpr.

1,116,144. **Apron.** Firma Joseph Beyer, Hamburg-Wandsbek.

1,116,154. **Baby's Feeding Outfit.** W. Schneider-Bartsch, Schmiedefeld, Kr. Schleusingen.

1,116,194. **Typewriter Pad.** Läufer Gummiwaren-fabrik Schwerdt & Renner, Hannover.

1,116,210. **Printing Roll.** Continental Gummi-Werke A. G., Hannover.

1,116,596. **Raincoat.** Meyer & Ries, Hannover.

1,116,691. **Rubber Insert for Clothing.** Marschel Frank Sachs A. G., Chemnitz.

1,116,797. **Candlestick.** Gerbrüder Schneider Hachenburg, Hessen-Nassau.

1,116,810. **Foundry Stamper.** F. Mohring, Karlstadt a. Main.

1,116,865. **Ear Plug.** A. Arnheiter, Bückeburg.

1,117,519. **Atomizer.** Firma Eduard Walther, Schleiz i. Th.

1,117,756. **Toy Boat.** Remod Spielwaren Gesellschaft m. b. H., Berlin S. 42.

1,117,797. **Heel.** Otto Berning & Co., Schelm.

1,117,902. **Anti-Skid Device.** Continental Gummi-Werke A. G., Hannover.

1,117,972. **Pessary.** Firma Ernst Erler, Berlin-Friedenau.

1,118,281. **Radio-Active Threads.** E. Ehrlich and W. Kummer, both of Berlin S. W. 68.

1,118,351. **Fountain Toothbrush.** H. Altmann, Dresden-Weisser Hirsch.

1,118,359. **Nipple.** H. A. Sierau & Co., Hamburg 8.

1,118,483. **Substance of Rubber, Etc.** Dr. Heinr. Traun & Söhne vorm. Harburger Gummi - Kamm - Compagnie, Hamburg.

1,118,502. **Detachable Toothbrush.** K. Kuhn, Heidelberg.

1,118,537. **Stocking.** B. Bauerfeind, Zeulenroda.

1,118,604. **Tubing.** L. Rado, Berlin-Wannsee.

1,118,859. **Conveyer Belt with Metallic Inserts.** Continental Gummi-Werke A. G., Hannover.

1,119,000. **Seat.** K. Heitmuller, Gottingen.

1,119,324. **Elastic Friction Gear Surface.** Berlin-Rizdorfer Gummiwaren-Fabrik Hans Schumann, Berlin N. 65, and R. von Krencki, Berlin-Halensee.

1,119,526. **Tire.** Gummiwerke Fulda A. G., Fulda.

1,119,676. **Brief Case.** K. Sendtner, Barenstein Bez. Chemnitz.

1,119,692. **Heel.** O. Herfeld, Zurich, Switzerland. Represented by E. Moldenhauer, Dusseldorf.

1,119,771. **Finger Cot.** L. Dell, Heidelsheim, Kr. Karlsruhe i. B.

1,120,073. **Protection for Washing Table.** A. Schmieder, Zwickau i. Sa.

1,120,091. **Sponge.** E. Johnsen, Wandsbek.

1,120,578. **Conveyer Belt.** Franz Clouth Rheinische Gummiwarenfabrik A. G., Koln-Nippes.

1,120,581. **Sport Shoe.** J. T. S. Rubber Co., Ltd., and F. W. East, both of Petersfield, England. Represented by B. Kugelmann, Berlin S. W. 11.

1,120,861. **Fabric Covered Ball.** B. Lindemann, Berlin S. W. 68.

1,121,034. **Belt Elastic.** Cosman, Villbrandt & Zehnder A. G., (Vereinigte Gummibandfabriken). Wuppertal-Elberfeld.

1,121,260. **Ball.** Rheinische Gummi- und Celluloid Fabrik, Mannheim-Neckarau.

1,121,292. **Horseshoe.** Imperator Hestesko A. S., Tonsberg, Norway. Represented by H. and M. Licht, both of Berlin S. W. 11.

1,121,317. **Cord.** E. Borchert, Loberflur 18 d. Erfurt.

1,121,345. **Heel.** K. Melcher, Velbert, Rhld.

1,121,346. **Multi-colored Sponge Rubber.** Masonia Rubber Works G. m. b. H., Wandsbek.

1,121,566. **Conveyer Belt.** Franz Clouth Rheinische Gummiwarenfabrik, A. G., Koln-Nippes.

1,121,970. **Container for Food, Fluids, Etc.** Dunlop Rubber Co., Ltd., London, and Anode Rubber Co., Ltd., St. Peters Port, Guernsey, both in England. Represented by R. and M. M. Wirth, C. Weihe, H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn and E. Noll, both of Berlin S. W. 11.

1,122,093. **Inner Tube.** J. M. Schwarzenacker, Saargebiet.

1,122,177. **Anti-skid Chain.** H. Mayer, Leutershausen i. Mittelfr., Bay.

Prints

United States

12,490. **Sphinx.** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y.

12,491. **300% Profit.** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y.

12,492. **Ramses—Original Transparent.** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y.

12,493. **Ramses.** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y.

12,494. **Apollos.** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y.

Trade Marks

United States

269,824. Shield containing the words: **"DuBarry Pedestro."** Footwear. Applebaum-Mautner Co., Champaign, Ill.

269,825. Shield containing the words: **"En-Joie Health Shoe."** Footwear. Endicott Johnson Corp., Endicott, N. Y.

269,854. **Rainbow.** Erasers, etc. Eberhard Faber Pencil Co., Brooklyn, N. Y.

269,924. **Commodity.** Friction tape. Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

269,925. **—I X L—.** Friction tape. Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

269,978. **Mohawk.** Golf balls. Sears, Roebuck & Co., Chicago, Ill.

270,066. Rectangle containing the words: **"Brouwer's Research, Milwaukee, Wis."** Footwear. S. J. Brouwer, Milwaukee, Wis.

270,068. **Junior Gripper.** Footwear. Ground Gripper Shoe Co., Inc., Boston, Mass.

270,070. **Paramount.** Footwear. Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.

270,075. Irregular shading separated by the word: **"Sanshu."** Clothing and footwear. Judsen Rubber Works, Chicago, Ill.

270,100. **Civil Service.** Footwear. Sears, Roebuck & Co., Chicago, Ill.

270,155. Coat-of-arms with the monogram: **"RM"**, between the words: **"Royal Master."** Tires. United States Rubber Co., New York, N. Y.

270,214. **Regent.** Heels. United States Rubber Co., New York, N. Y.

270,244. **Trulifine.** Footwear. McCain-Wright, Inc., St. Louis, Mo.

270,251. Circle containing the words: **"Full Molded Perfect Circle"** in the letter: "C" of the word: **"Cornell."** Pep Boys, Manny, Moe & Jack, Philadelphia, Pa.

270,259. **Palmer Apparel Shops, Inc.** Footwear and clothing. Palmer Apparel Shop, Chicago, Ill.

270,264. **It's the Kounter that Kounts.** Footwear. H. Jacob & Sons, Inc., Brooklyn, N. Y.

270,295. **Sharples Super Centrifuge.** Centrifugal machines. Sharples Specialty Co., Philadelphia, Pa.

270,305. Circle containing representation of a man's arm and in the border the words: **"Mussalls Brand Toughest Made."** Lamp and windshield wiper tubing and gaskets. Eno Rubber Corp., Los Angeles, Calif.

270,358. **JolLeeJays.** Sponge rubber toys. Lee Rubber & Tire Corp., Conshohocken, Pa.

270,409. Circle containing representation of sunset. Golf balls. Pacific Golf Ball, Ltd., San Francisco, Calif.

270,412. **Wingfoot.** Storage batteries. Goodyear Tire & Rubber Co., Akron, O.

270,516 and 270,517. **Federal.** Cord and square woven fabrics coated with compounded unvulcanized rubber. Federal Rubber Co., Chicago, Ill.; Cudahy, Wis.; and Chicopee Falls, Mass.

270,518. Pennant bearing the word: **"Federal."** Cord and square woven fabrics coated with compounded unvulcanized rubber. Federal Rubber Co., Chicago, Ill.; Cudahy, Wis.; and Chicopee Falls, Mass.

270,574. **Ralph Jones.** Athletic shoe. Servus Rubber Co., Rock Island, Ill.

270,627. Label with twelve stars between the words: **"Flexible-Comfort Dr. Franz Health Shoe."** Footwear. Finkovitch-Levine Shoe Co., Boston, Mass.

270,635. **De Fino Footwear.** Footwear. D. Feinefeld, doing business as French Bootery, Birmingham, Ala.

270,638. **Check-O Interwoven.** Footwear. Woodbury Shoe Mfg. Co., Derry, N. H.

270,670. **Zeplin.** Golf balls. Wilson-Western Sporting Goods Co., Chicago, Ill.

270,680. **Rescue.** Fire hose. Hewitt-Gutta Percha Rubber Corp., Buffalo, N. Y.

270,693. **Skookum.** Belting, hose, and piston packing. Pioneer Rubber Mills, San Francisco, Calif.

270,723. **Lomden's.** Footwear. Harry Sir & Son, Inc., New York, N. Y.

270,724. Ornamented rectangle with a scenic picture, containing the word: **"Goldcoast."** Footwear. L. Klein, Inc., Chicago, Ill.

270,744. Broken concentric circles partly covered by a label containing the word: **"Tasco."** Asphaltic compounds used as softeners for rubber compounds. Tasco Asphalt Co., Newark, N. J.

270,763. **Velutex.** Rubber treated textile fabric. E. I. du Pont de Nemours & Co., Wilmington, Del.

270,769. **Hi-King.** Footwear. Sears, Roebuck & Co., Chicago, Ill.

270,778. **So-Leather.** Liquid leather in the nature of an adhesive for mending leather or rubber shoes, soles, heels, etc. H. H. Schaffer, doing business as So-Leather Mfg. Co., St. Paul, Minn.

270,844. **Black Diamond.** Golf balls. Worthington Ball Co., Elyria, O.

270,845. **Blue Diamond.** Golf balls. Worthington Ball Co., Elyria, O.

270,846. **White Diamond.** Golf balls. Worthington Ball Co., Elyria, O.

270,847. **Diamond.** Golf balls. Worthington Ball Co., Elyria, O.

270,862. Representation of portion of a belt. Belts and belting. B. F. Goodrich Co., New York, N. Y.

270,898. **Shamykyd.** Waterproof fabrics. Schwarzwaelder Co., Philadelphia, Pa.

270,939. **Darex.** Adhesives. Dewey & Almy Chemical Co., N. Cambridge, Mass.

270,978. **Orrsell.** Adhesive compounds. Orrsell Co., New York, N. Y.; Philadelphia, Pa.; and Vancouver, Wash.

271,000. Representation of two eagles in a circle and two spaced substantially concentric stripes disposed centrally of a tire casing and placed symmetrically on opposite sides thereof. Tires. Goodyear Tire & Rubber Co., Akron, O.

271,060. Rectangle containing the words: **"Trade Mark. Red Clayton Mark Rubber."** Rubber packers. Clayton Mark & Co., Chicago, Ill.

271,075. **Rubber Glaze.** Vehicle top dressings. D. T. Swavely, doing business as Swavely Varnish Works, Flint, Mich.

Dominion of Canada

49,140. **Red Tip.** Rubber pads for horse and mule shoes. Phoenix Mfg. Co., Joliet, Ill., U. S. A.

49,142. Letters: **"TI"** and **"BAR."** Pigments for paints, enamels, the rubber industry, etc. Titanium, Ltd., Montreal, P. Q.

49,143. Letters: **"TI"** and **"Stron."** Pigments for paints, enamels, the rubber industry, etc. Titanium, Ltd., Montreal, P. Q.

49,144. Letters: **"TI"** and **"Pur."** Pigments for paints, enamels, the rubber industry, etc. Titanium, Ltd., Montreal, P. Q.

49,145. Letters: **"TI"** and **"Cal."** Pigments for paints, enamels, the rubber industry, etc. Titanium, Ltd., Montreal, P. Q.

49,155. **Black Pearl.** Golf balls and other articles connected with that game. Donaldson Mfg. Co., Ltd., Glasgow, Scotland.

49,188. **Defiance.** Golf balls. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont.

49,201. Rectangular Egyptian device consisting primarily of columns, borders, the representations of two seated men, and the word: **"Ramses."** Prophylactic rubber articles. L. Hilsenbeck, Inc., New York, N. Y., U. S. A.

49,210. **Par.** Athletic goods. A. G. Spalding & Bros. of Canada, Ltd., Brantford, Ont.

49,218. **Pancrom will not mark floors.** Soles. Panco Rubber Co., Chelsea, Mass., U. S. A.

49,223. **Cosavult.** Adhesives, resins, chemical products, rubber and rubber substitutes and goods made therefrom, etc. I. G. Farbenindustrie A. G., Frankfurt a. Main, Germany.

49,265. Seal containing representation of a scout and the word: **"Pathfinder."** Storage batteries. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

49,269. **Ceymal.** Rubber treated fabrics and articles made therefrom. Canadian Industries, Ltd., Montreal, P. Q.

49,301. Seal containing representation of an eagle between the words: **"Goodyear Eagle."** Tires and parts therefor. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

49,309. Seal containing representation of an eagle and the word: **"Eagle."** Tires and parts therefor. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

United Kingdom

B500,926. Circle containing representation of a star and the letters: **"P C M"** on either side of the words: **"Pirelli Superflex."** Tires and tubes therefor. Pirelli, Ltd., London, E.C.4.

510,864. **Tantex.** Partly prepared rubber and reclaimed rubber. Northwestern Rubber Co., Liverpool, and Akron, O., U. S. A.

510,901. **Tiron.** Electric cables. St. Helens Cable & Rubber Co., Ltd., Buckinghamshire.

511,146. Hexagon containing three smaller hexagons and the letters, **"B D C."** Adhesives and cleaning and polishing preparations and materials. British Dyestuffs Corp., Ltd., Manchester.

511,195. Triangle formed primarily by the Russian characters: **"C. C. C. P. Mockba. B. C. H. X. Pesnhotpect."** Goods of india rubber and gutta percha not included in any but Class 40. Gosudarstvenni Trust Resinovoi Promishlennosti "Resinotrust," Moscow, Russia.

Designs

United States

81,136. **Sole.** Term 14 years. M. S. Klein, assignor to Panco Rubber Co., both of Chelsea, Mass.

81,160. **Tire.** Term 14 years. W. E. Shively, Akron, O., assignor to Sears, Roebuck & Co., Chicago, Ill.

81,210. **Tire.** Term 14 years. R. Smith, Gosport, Ind.

Labels

United States

37,368. **Glove Brand.** Storm footwear. Goodyear's India Rubber Glove Mfg. Co., Naugatuck, Conn.

37,376. **Instant Type Cleaner and Rubber Platen Renewer.** Preparation for cleaning typewriter type and renewing rubber platen. E. J. Malarin, San Francisco, Calif.

MARKET REVIEWS

Crude Rubber

New York Exchange

AT ONE time it looked as if rubber were going to make the establishment of new lows a daily occurrence. Almost every day, the price would slide a few points with the lowest level reached at 11.70 cents.

In company with other commodities, rubber is in the most unfavorable position for years. Overproduction is the chief cause, but there are many other contributing factors. The action of the stock market in breaking through the panic lows created last November has reflected the extremely poor business conditions which are generally prevailing. It was thought, about the first of the year, that business would pick up with the coming of spring, but those hopes were rudely shattered.

The general opinion now is that no hope of business revival can be expected before the fall, but business will not recover until there is a definite turn in commodity prices. The price recession is more universal in scope than it has been at any previous time, and thus far the benefits of lower prices for basic products have not been passed along in any great measure to the consuming public in the form of reduced retail quotations.

Auto production, which was expected to pick up during the summer motoring season, has been disappointing. For the first three months of 1930, automobile production dropped 31 per cent below the 1929 peak and 6 per cent below the five-year average. Production has passed the highest point for the present season and will probably be duller for some time to come. The new models coming out in late summer may stimulate demand somewhat, but if the stock market does not recover before then, the efforts are likely to fall flat.

As a Henderson report says, "Ultimate recovery seems inevitable . . . the present selling price is uneconomic to a large number of producers." These marginal producers will suffer first, and a lot of small producers will undoubtedly be forced to the wall before a proper readjustment of the situation is effected. At the present low prices they can't make money, and it is simply a question of time before some of them succumb.

RUBBER BULL POINTS

1. Production curtailed to meet only current demand.
2. Decline in Malayan rubber stocks: (a) Dry weight rubber on estates of over 100 acres in Malaya at end of May, 12,577 tons, against 23,984 tons on April 30. (b) Total production of the same estates in May, 3,662 tons, against 18,849 tons in April.
3. Shipments from Malaya, 36,482 tons, compared with 34,625 tons in April.

RUBBER BEAR POINTS

1. Probability of inventory write-downs.
2. Production of tires in the current year to June 1, about 30 per cent below corresponding period for 1929. (a) Decline in automobile production for week ended June 21 from 93.1 in week of June 14 to 89.0, the lowest since the week ended April 12.
3. Current output of tires, according to best available evidence, still slightly in excess of demand.
4. Stocks of crude in England exceeding 104,000 tons, against a little more than 35,000 tons a year ago.
5. Production of automobiles passing peak for year. (a) Scant promise of fundamental improvement in automobile production or sale for the second half of the year.
6. Total automobiles for the first half considerably below 2,500,000 units. (Estimated.) (a) Full year probably 20 per cent under the high record established in 1929. (b) May sales estimated at about 75 per cent of a year ago.
7. Stocks near record levels; consumption, subnormal, and production excessive.
8. Reductions in tire prices.
9. Failure of restriction agreement.

Rumors are a vital part of a bear market, and the rubber trade was treated to them as well as to those in the stock market. Henderson reported that persistent rumors of communistic activities in Java present a possibility of a future influence on rubber production. The Communists will first have the job of educating the natives to the fact that they should have more leisure, else how could they enjoy more money?

The following significant cable was received by the exchange on June 17 from Singapore: "The F. M. S. Government has proposed for the general benefit of the rubber industry to appropriate $2,500,000 from a special reserve fund for expenditure in experimental research and propaganda."

This seems to be an effort to get at the root of the problem. With large stocks on hand, and potential output even larger than any we have witnessed, the only logical method to meet conditions is to discover new uses for rubber.

While producers are making efforts to find new sources of demand for rubber, manufacturers are also taking steps to extricate themselves from the present situation, if rumors are to be accredited. Manufacturers are seeking stability, and one of their measures of self-preservation is the trend toward mergers. According to Wall Street information, several of the large units of the rubber business are negotiating to take over other companies. Duplication of effort is being eliminated, and plants are being transformed to bring about a greater use of machinery. The manufacturers are trying to meet their problems by lowering production costs and by eliminating cutthroat competition so far as possible.

Week ended May 31: Rubber reached new low levels on the last trading day of the week, May 29. July delivery sold at 14 cents, and the rest of the No. 1 standard contract list declined from 22 to 33 points from the previous close.

Stocks of crude rubber at London and Liverpool increased to a total of 102,724 tons. Estimates by members of the Rubber Exchange were that crude consumption for May will total between 44,000 and 45,000 long tons, as compared with 40,207 tons used in April. Consumption for May, 1929 was 49,233 long tons, a record monthly figure for the industry.

Cables to the Rubber Exchange on Monday reported that crude rubber shipments from the Dutch East Indies for April totaled 24,090 tons, against 23,855 tons in the previous month.

In respect to tire production the F. R. Henderson Corp. said, "There seems to be little or no improvement in the rate of tire production, but there are indications of in-

The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLEARING HOUSE PRICES—CENTS PER POUND—"NO. 1 STANDARD" CONTRACTS

Positions	May, 1930						June, 1930															
1930	26	27	28	29	30*	31*	2	3	4	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
May	14.08	14.13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June	14.13	14.18	13.85	13.95	.....	.....	13.60	13.75	13.10	12.65	12.90	12.85	12.65	12.00	11.95	12.05	12.22	11.95	11.70	11.90	11.70	11.65	11.72	11.75
July	14.18	14.23	14.00	14.10	.....	.....	13.70	13.85	13.22	12.82	13.02	12.95	12.75	12.12	12.05	12.25	12.32	12.05	11.80	12.00	11.80	11.75	11.82	11.85
Aug.	14.34	14.37	14.10	14.25	.....	.....	13.85	14.00	13.45	13.02	13.16	13.10	12.90	12.27	12.17	12.44	12.52	12.20	12.01	12.20	11.97	11.94	12.01	12.00
Sept.	14.50	14.52	14.30	14.40	.....	.....	14.01	14.10	13.63	13.22	13.30	13.25	13.05	12.42	12.40	12.63	12.72	12.36	12.23	12.40	12.15	12.14	12.20	12.15
Oct.	14.65	14.67	14.44	14.56	.....	.....	14.14	14.29	13.78	13.42	13.45	13.43	13.17	12.54	12.54	12.82	12.90	12.54	12.39	12.57	12.33	12.32	12.38	12.33
Nov.	14.80	14.82	14.58	14.71	.....	.....	14.27	14.42	13.91	13.52	13.60	13.51	13.29	12.65	12.66	13.01	13.07	12.71	12.55	12.73	12.51	12.50	12.56	12.51
Dec.	14.95	14.97	14.73	14.87	.....	.....	14.40	14.55	14.04	13.65	13.75	13.65	13.40	12.80	12.82	13.20	13.25	12.85	12.72	12.90	12.70	12.67	12.75	12.70
1931																								
Jan.	15.10	15.05	14.81	14.96	.....	.....	14.55	14.75	14.22	13.84	13.94	13.84	13.60	12.98	12.98	13.36	13.40	13.03	12.90	13.05	12.86	12.82	12.90	12.86
Feb.	15.17	15.15	14.89	15.06	.....	.....	14.70	14.95	14.40	14.03	14.12	14.02	13.80	13.17	13.16	13.51	13.55	13.20	13.07	13.20	13.01	13.00	13.05	13.02
Mar.	15.25	15.25	15.05	15.15	.....	.....	14.85	15.15	14.58	14.22	14.30	14.22	14.00	13.35	13.32	13.67	13.65	13.37	13.24	13.35	13.17	13.17	13.20	13.15
Apr.	15.37	15.35	15.15	15.25	.....	.....	15.00	15.35	14.76	14.42	14.45	14.40	14.20	13.53	13.50	13.83	13.87	13.52	13.41	13.51	13.33	13.34	13.37	13.35
May	.....	.....	.....	.....	.....	.....	15.15	15.55	14.94	14.62	14.60	14.60	14.40	13.71	13.68	13.99	14.04	13.67	13.58	13.67	13.49	13.51	13.54	13.51

* Holiday.

creases in the near future. We believe rubber has reached a level where the statistical position can be disregarded except as a basis for study. While the near future holds small promise for activity, the distant months are temptingly low."

It is expected that the results of the recent tapping holiday will be felt during the month of June, and if producers curtail their shipments, the large stocks that have accumulated in London will probably be drawn upon to supply demands. While another tapping agreement is imminent, traders generally feel that the Dutch would find difficulty in trying to bring the British producers to a conference next month. Prices at the close of May 29 on No. 1 standard contracts were:

Position	High	Low	Close	Yesterday's Close
June	....	....	13.95	13.85
July	....	....	14.10	14.00
Aug.	....	....	14.25	14.10
Sept.	14.40	14.23	14.40	14.30
Oct.	....	....	14.56	14.44
Nov.	....	....	**14.71**	**14.58**
Dec.	....	....	14.87	14.73
Jan.	....	....	14.96	14.81
Feb.	....	....	15.06	14.89
Mar.	15.15	15.05	15.15@15.18	15.05@15.10
Apr.	....	....	15.25	15.15

Week ended June 7: Following the lead of mail-order houses several weeks ago, The Goodyear Tire & Rubber Co. on June 4 announced cuts of 5 to 6 per cent in tire prices. It was expected that the other manufacturers, Firestone, Goodrich, and United States Rubber Co. would follow suit, which they did.

Crude rubber values are approximately 40 per cent below those of a year ago, and it is expected that the prices of finished products will also be cut. The official reason for lower tire prices as given by P. W. Litchfield, president of Goodyear, was that improved manufacturing methods and economies as well as the lower cost of raw materials were responsible for the cut. Since raw materials are so much cheaper than they were, it is expected that manufacturers' profits will not be materially changed.

Shipments of rubber from Malaya in May of 49,039 tons, against 45,517 tons in April and 43,960 tons during May, 1929, caused further weakening of the commodity to the lowest levels ever reached at 6 9/16 pence a pound for spot sheet. New low levels were reached in this market on the 4th, with "A" contracts off 30 to 60 points, and No. 1 standard contract off 45 to 65 points.

A cable to the Rubber Exchange on June 2 stated that a joint committee of British and Dutch growers will meet in London on June 26 to consider the question of taking further measures in correcting the overproduction problem. The question involved mainly will probably be to secure full cooperation from native producers.

This report on action for restriction served to rally prices a bit, and they closed as much as 40 points higher on June 3, when the news came out.

This slight advance, however, was not maintained on Thursday because the announcement of the reduction in tire prices produced some distressed selling. July delivery broke through the new low records with a price of 12.70 cents per pound, the cheapest level for rubber to be posted on the exchange. The previous day's low was 13.10 and a week ago was 14.00 cents on the same delivery. Prices at the close of June 7 on No. 1 standard contracts:

Position	High	Low	Close	Yesterday's Close
June	....	....	12.85	12.90
July	....	....	12.95	13.02
Aug.	....	....	13.10	13.16
Sept.	13.28	13.25	13.25@13.28	13.30@13.35
Oct.	....	....	13.43	13.45
Nov.	....	....	13.51	13.60
Dec.	....	....	13.65@13.75	13.75@13.80
Jan.	....	....	13.84	13.94
Feb.	....	....	14.02	14.12
Mar.	14.38	14.38	14.22@14.30	14.30
Apr.	....	....	14.42	14.45
May	....	....	14.60	14.60

Week ended June 14: For the last fifteen months stocks of crude rubber have been exceeding consumption. Automobile production for the first three months of 1930 was 31 per cent below the 1929 peak and 6 per cent below the five-year average. These were the figures that H. H. Rice, president of the National Automobile Chamber of Commerce, gave to President Hoover.

The news that overcomes the above handicap will have to be strong, to say the least. That is one reason so little attention is being given to the results of the May tapping holiday. Commerce Department officials believe that it is too early to know whether the holiday had any effect, but they also believe that in face of the bad news prevailing the small reduction that even the most optimistic could expect would make little difference.

July delivery on the "A" contract hit a new bottom, on June 9 at 12.60 cents a pound. This was 10 points below the record established the previous week and 20 points lower than the preceding Saturday.

The London and Singapore markets were closed on Monday for the Whitsuntide holidays, and the short week made for dull trading in those centers.

Dealers' stocks of crude rubber in the Far East on May 31 totaled 40,950 tons as compared with 42,381 tons at the close of the previous month, according to a cable sent to the Rubber Exchange on June 11.

Stocks in London and Liverpool at the end of last week were 77,616 tons and 25,320 tons, respectively.

Shipments from the Dutch East Indies during April were reported at 24,090 tons. Malayan shipments for the month of May were 49,039 tons; imports into Malaya during May were 13,253 tons. Prices at the close of June 14 on No. 1 standard contracts follow:

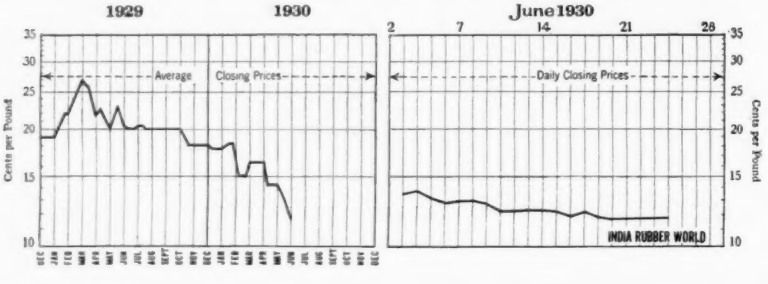
Position	High	Low	Close	Yesterday's Close
June	....	....	11.95	12.22
July	....	....	12.05	12.32
Aug.	....	....	12.20	12.52
Sept.	12.40	12.37	12.36@12.38	12.72@12.75
Oct.	....	....	12.54	12.90
Nov.	....	....	12.71	13.07
Dec.	....	....	12.85	13.25
Jan.	....	....	13.03	13.40
Feb.	....	....	13.20	13.55
Mar.	....	....	13.37@13.40	13.65@13.75
Apr.	....	....	13.52	13.87
May	....	....	**13.67**	**14.04**

RUBBER EXCHANGE ACTIVITIES

Transactions

Week Ended	Contracts Sold: Number	Contracts Sold: Tons	Transferable Notices	Week-End Tone
May 31...	459	1,147.5	187	Very steady
June 7...	1,124	2,810.0	18	Steady
June 14...	2,012	5,080.0	10	Easier
June 21...	1,715	4,287.5	0	Steady
Totals ...	5,310	13,275.0	215	

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	May, 1930						June, 1930														
	26	27	28	29	30*	31*	2	3	4	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
Ribbed Smoked Sheet	14	14	13⅞	13⅞	....	....	13⅝	13¾	13¼	12⅞	13	13	12¾	12¼	12¼	12⅜	12⅜	12¼	11⅞	12⅛	11⅞	11¾	11¾	11¾
No. 1 Thin Latex Crepe	14⅜	14⅜	14¼	14¼	....	....	14⅛	14¼	13⅝	13⅜	13½	13½	13¼	12⅝	12⅝	12¾	12¾	12⅜	12¼	12⅜	12¼	12⅛	12⅛	12⅛
No. 1 Thick Latex Crepe	14	14	13⅞	13⅞	....	....	13⅝	13¾	13¼	12⅞	13	13	12¾	12¼	12¼	12⅜	12⅜	12¼	11⅞	12	11⅞	11¾	11¾	11¾
No. 1 Brown Crepe	13½	13½	13⅜	13⅜	....	....	13¼	13⅜	13	12⅝	12¾	12¾	12½	12	12	12	12	11⅞	11½	11½	11½	11¼	11¼	11¼
No. 2 Brown Crepe	13¼	13¼	13⅛	13⅛	....	....	13	13⅛	12¾	12⅜	12½	12½	12¼	11¾	11¾	11¾	11¾	11⅝	11¼	11¼	11¼	11	11	11
No. 2 Amber	13⅝	13⅝	13½	13½	....	....	13⅜	13½	13	12⅝	12¾	12¾	12½	12	12	12	12	11⅞	11½	11½	11½	11¼	11¼	11¼
No. 3 Amber	13⅜	13⅜	13¼	13¼	....	....	13⅛	13¼	12¾	12⅜	12½	12½	12¼	11¾	11¾	11¾	11¾	11⅝	11¼	11¼	11¼	11	11	11
No. 4 Amber	12⅞	12⅞	12¾	12¾	....	....	12⅝	12¾	12¼	12	12⅛	12⅛	11⅞	11⅜	11⅜	11⅜	11⅜	11¼	10⅞	10⅞	10¾	10⅝	10⅝	10⅝
Rolled Brown	9	†	8⅞	8⅞	....	....	8⅞	9	8⅞	8⅝	8¾	8¾	8⅝	8¼	8¼	8⅜	8⅜	8¼	8¼	8⅜	8¼	8¼	8¼	8¼

*Holiday.

Week ended June 21: "The crude rubber market the past week," said H. Hentz & Co. on the 19th, "has acted generally in sympathy with other commodity and security markets and prices have again registered new low levels. Heavy liquidation of July contracts by commission houses has been absorbed largely by dealer interests. While the lowness of prices tends to restrict fresh selling pressure, confidence in the immediate future of the constructive side of the market is lacking in view of the business conditions existing and the uncertainty of the next few months. Expectations of lower shipments from Malaya during this month are offset by prospects of a lower consumption report here."

The rubber news is almost completely bearish with prices reaching a new all-time low on the 16th. The July delivery fell to 11.70 cents a pound or 20 points below the previous low record.

Consumption of crude rubber of all classes by manufacturers in the United States in May totaled 39,902 tons, while imports of crude rubber of all classes into the United States during May totaled 40,745 tons.

On Thursday figures cabled to the exchange showed that stocks of crude rubber on Far Eastern estates in May amounted to 12,577 tons, compared with 23,984 tons at the end of April.

It was felt that these figures were interesting because they showed the effect of the tapping holiday declared during that month. Dealers' stocks at the end of May totaled 51,383 tons, compared with 55,654 tons at the end of April. Production declared on estates of over 100 acres amounted to only 3,644 tons, as against 18,849 tons declared during April. Figures for estates smaller than 100 acres are not given.

The Board of Governors of the Rubber Exchange of New York have ordered that Saturday, July 5, as well as July 4, be declared a holiday on the exchange. Closing prices of June 21, on No. 1 standard contracts were:

Position	High	Low	Close	Yesterday's Close
June	....	....	11.75	11.72
July	....	....	11.85	11.82
Aug.	....	....	12.00	12.01
Sept.	....	....	12.15	12.20@12.25
Oct.	....	....	12.33	12.38
Nov.	....	....	12.51	12.56
Dec.	12.75	12.70	12.70@12.72	12.75@12.78
Jan.	....	....	12.86	12.90
Feb.	....	....	13.02	13.05
Mar.	....	....	13.15@13.25	13.20@13.28
Apr.	....	....	13.35	13.37
May	....	....	13.51	13.54

On Monday, June 23, crude rubber futures on the Rubber Exchange were firm and advanced from 7 to 24 points. London was steady, Singapore stagnant, both showing fractional declines. Sales were 28 lots or 280 long tons in the No. 1 standard contract.

June 24 the market tone was quiet. Futures were barely steady, unchanged to 8 points advance from the closing prices of Saturday, June 21. Ribbed smoked sheets closed at 11.87 cents nominal.

On June 25 spot ribs opened at 11.90 cents, attributed to renewed conferences scheduled to occur between British and Dutch growers to consider planning a regular schedule of tapping holidays for for the future.

New York Outside Market

Practically all the news continues to be bearish, and it is unlikely that it will show any change from the present trend for some time to come.

While new models may stimulate automobile buying in late summer and early fall, the demand for tires thus created will probably be only temporary. Excepting the artificial stimulus given to the trade by these new models, the seasonal fall and winter outlook is for lowered production of motor cars.

The "Big Four" rubber manufacturers are closing their plants in July for at least two weeks, apparently to take inventory and to give their men a vacation. It is felt, however, that it is simply another method for curtailing production. Many of the smaller manufacturers will close their shops for a month.

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and June 25th, the current date

Plantation Hevea	June 25, 1929	May 26, 1930	June 25, 1930
Rubber latex (Hevea) ..gal.	$1.50 @	$1.25 @	$1.25 @
Sheet			
Ribbed, smoked, spot	.20¼@.20⅜	.14 @.14¼	.12 @.12⅛
July	.20¼@.20⅜	.14 @.14⅛	.12 @.12⅛
August-September	.20⅜@.20½	.14½@	.12¼@.12⅜
October-December	.21¼@.21⅜	.15 @.15¼	.12½@.12¾
January-March	.21¾@	.15½@.15¾	.13 @.13¼
CREPE			
No. 1 Thin latex (first latex) spot	.21½@.21¾	.14½@.14⅝	.12½@.12¾
July	.21¾@	.14⅞@	.12½@.12¾
August-September	.21⅞@	.15 @	.12¾@.13
October-December	.22 @	.15⅛@.15¾	.13 @.13⅜
January-March	.22¼@	.16 @.16¼	.13½@.13¾
No. 2 Amber, spot ("B" blanket)	.18½@	.13¾@.13⅞	.11½@.11⅝
July	.18½@	.13⅞@	.11⅝@
August-September	.18½@	.14 @	.11¾@.11⅞
October-December	.18¾@	.14¼@	.12⅛@.12¼
January-March	.19 @	.14¾@	.12½@.12¾
No. 3 Amber, spot ("C" blanket)	.18½@	.13½@	.11¼@
No. 1 Brown, clean, light, thin	.18⅞@	.13¾@.14	.11½@
No. 2 Brown, clean, thin	.18⅝@	.13½@.13¾	.11⅛@.11¼
Brown, roll	.14 @	.09½@.09⅝	.08⅝@.08¾
East Indian			
PONTIANAK			
Banjermasin	@	.08 @	.08 @
Pressed block	.16¼@	*.12¾@.13	.13 @
Sarawak	@	.08 @	.08 @
South American			
PARAS			
Upriver, fine	.21¾@	.15¾@	.13½@
Upriver, fine	*.26½@	*.19½@	*.18½@
Upriver, coarse	.12½@	.07½@	.07 @
Upriver, coarse	*.19 @	*.13¼@	*.12¾@
Islands, fine	.20 @	.14¾@	.14½@
Islands, fine	*.26¼@	*.19 @	*.18¼@
Acre, Bolivian, fine	.22¾@	.15¾@	.13¾@
Acre, Bolivian, fine	*.27 @	*.19½@	*.18¾@
Beni, Bolivian	.23 @	.16 @	.14 @
Madeira, fine	.21⅜@	.15⅜@	.13½@

South American	June 25, 1929	May 26, 1930	June 25, 1930
PARAS—*Continued*			
Peruvian, fine	$0.20 @	$0.14¼@	$0.13 @
Tapajos, fine	.20 @	.14¼@	.13 @
CAUCHO			
Upper caucho ball	.12½@	.07½@	.07 @
Upper caucho ball	*.19 @	*.13¼@	*.12¾@
Lower caucho ball	.11¾@	.07 @	.06½@
Maniçobas			
Ceará negro heads	†.20 @	†.14 @	†.14 @
Ceará scrap	†.12 @	†.08 @	†.08 @
Manicoba, 30% guaranteed	†.22 @	†.16 @	†.16 @
Mangabiera, thin sheet	†.22 @	†.16 @	†.16 @
Centrals			
Central scrap	.11 @.12	.06 @.07	.05½@.06½
Corinto scrap	.10 @.11	.06 @.07	.05½@.06½
Esmeralda sausage	.11 @.12	.06 @.07	@
Guayule			
Duro, washed and dried	.19½@	.16½@	.16½@
Ampar	.21 @	.17 @	.17 @
Gutta Percha			
Gutta Siak	.20½@.21¾	.16 @	.15 @
Gutta Soh	@	.28 @	.25 @
Red Macassar	3.00 @	2.25 @2.30	2.30 @2.50
Balata			
Block, Ciudad Bolivar	.52 @.53	.41 @.42	.41 @
Columbia	.46 @.48	†.36 @	.36 @
Manaos block	.58½@.59½	.44 @.45	.44 @
Surinam sheet	.54 @.56	.60 @.62	.60 @
Amber	.57 @.59	.63 @.65	.63 @
Chicle			
Honduras	‡.68 @	@	@
Yucatan, fine	‡.68 @	‡.70 @	.60 @

* Washed and dried crepe. Shipment from Brazil.
† Nominal. ‡ Duty paid

For June, rubber traders report a slight improvement over May, but the increased demand coincident with the advent of the motoring season has not been so evident as was expected. Prices declined to new low levels below 12 cents, and some morbid pessimists are predicting a 10-cent level. Growers are certainly not making any money at these prices, and it seems to be a test of endurance for many marginal producers. A weeding-out process is probably not far off, and though it is a severe remedy for overproduction, economic laws are inexorable.

On June 26 a meeting of the Anglo-Dutch producers was scheduled, in another attempt to obtain curtailment by agreement. Skepticism is spreading like a fever, so that a great deal of doubt was entertained in reference to definite results from the meeting. British and Dutch producers may come to a working agreement, it is declared, but the native producer can hardly be counted on for cooperation. He does pretty much as he pleases.

The trend in production for May was downward, wiping out the small gain registered in April but not quite reaching the December level. While the figures are not yet available, it is safe to say that June will show even further declines.

The decline in May consumption to 39,902 tons from 40,207 tons in April, was disappointing because a figure of 42,000 to 45,000 tons had been expected earlier in the month.

Overproduction is the reason for the declines in many of the commodities, rubber not excepted. The efforts at curtailment, however, and the extremely low prices now prevailing will eventually remedy conditions.

What is needed most now is patience. Business will readjust itself, but it will take time. Traders at the moment are thoroughly discouraged, but with the first signs of recovery they are likely to become over-optimistic just as they are now over-pessimistic. A conservative position is the sanest course, with patience enough to allow business to heal thoroughly its wounds before it is again urged to a faster pace.

Week ended May 31. As was to be expected in a four-day week, the market was a quiet affair, although a bit of strength was displayed on the last day, and actuals held up much better than exchange rubbers.

Demand from manufacturers was spasmodic and chiefly for spot rubber to be delivered in June. Browns and ambers were rather scarce during the week and almost reached the price at which ribbed smoked sheets were selling.

The belief was expressed that the market possessed underlying strength, and while tire consumption doesn't show much improvement, it is expected that more seasonal weather would help matters a great deal.

A number of traders left early for their holidays, but the market did well on the 29th in spite of that fact. Factories submitted a good run of inquiry for standard and off-grade rubber so that actuals did not reflect the decline witnessed on the exchange. Prices slid only an eighth of a cent below the previous day's close except for standard thick latex. June No. 1 ribs were at 14 cents, and pale thin crepe was 14½ cents for June. Closing prices on May 31 were:

Spot	May 31	Month Ago	Year Ago
Crepe	14¼	14⅜	21⅝
Ribs	13⅞	14⅝	21⅛
Upriver, fine...	15½	15¾	23

Week ended June 7. "An unsteadily declining market," was the label applied to operations for this week. Rubber dived for new low prices but came up for air occasionally in response to buying by manufacturers who took advantage of the irregularity and bought on the dips.

Remilled grades did not command much attention because the price on ribbed smoked sheets was so low that the better grades closely approximated the prices of the remilled grades, and as this is strictly a buyer's market, the best rubber can be had at extremely low prices.

Government figures for the end of April show unsold supply of pneumatic tires held by manufacturers and on consignment increased slightly during the month as for each of the three months preceding. The total on hand is a sixth below a year before, and output for April is off about a fourth for April, 1929. Closing prices on June 7 were:

Spot	June 7	Month Ago	Year Ago
Crepe	13½	14½	21¾
Ribs	13	14¼	21
Upriver, fine...	15¼	15¾	23½

Week ended June 14. Not to be outdone, prices on the outside rubber market did just as badly as those on the stock exchange. New low prices were established with prices sagging most on the 10th and the 11th. Toward the end of the week they rallied slightly, but only slightly.

June and spot dropped to 12.60 cents a pound and July and July-Sept. were only fractionally higher. Manufacturers took advantage of these bargain prices, and fair buying was reported for the week in both spot and future rubber.

News is still scarce, and ditto marks of happenings in previous weeks saves needless repetition. The statistical position of rubber is about the same, and the technical position a little weaker because the shorts cashed in on the low levels reached on the 10th and 11th. Liquidation of the July position was the cause of the weakness, due probably to the poor results of the May tapping holiday, which has generally been labeled a failure.

We might call this a "tramp" market. It's just drifting aimlessly, sinking here and there for an unnecessary rest, and wandering with no definite goal. Closing prices on June 14 were:

Spot	June 14	Month Ago	Year Ago
Crepe	12⅝	14½	21⅛
Ribs	12¼	14¼	20
Upriver, fine...	14½	15¾	22¾

Week ended June 21. While the stock exchange was wobbling under the hectic bombardment of the bear attacks, the rubber market proceeded calmly on the irregular course which it had followed for the last month, mostly downward. Prices were irregular with little demand.

An explanation of the difference in activity between the two markets might be that the rubber market is less likely to be raided further because it has about struck bottom for a while, but the stock market is vulnerable in any number of places to the bear forces.

An interesting spread was in evidence during the week in the spot prices at London and New York. July was 11.70 here, and 12.25 in London, or ½-cent higher. The only explanation appears to be that spot rubber was being bought and future sold in London.

Importers and shippers are, naturally, reluctant to sell at present levels, but the prevailing situation will make them take their bitter medicine, and like it, too.

Factories bought principally for current needs although some future buying was in evidence.

The meeting of Anglo-Dutch producers is receiving little attention in spite of the fact that news is scarce, and not one ray of optimism is able to pierce the present all-engulfing cloud of gloom about the results likely to appear. Closing prices on June 21 were:

Spot	June 21	Month Ago	Year Ago
Crepe	12⅛	14⅜	21⅜
Ribs	11¾	13¾	20⅜
Upriver, fine...	14⅜	15¼	22½

Extreme quiet prevailed in the outside market for actuals from June 23 to 25. The spot prices of ribs advanced on the 23rd to 12 cents, and this price was maintained for three days, being 12 cents on the 25th. Mills exhibited no consuming interest.

May Consumption and Stocks

Consumption of crude rubber of all classes by manufacturers in the United States in May is estimated at 39,902 long tons, according to statistics compiled by The Rubber Manufacturers Association. This compares with estimated consumption of 40,207 long tons in April and 49,233 long tons in May, 1929. Imports of crude rubber of all classes into the United States during May totaled 40,745 long tons. This compares with imports of 49,927 long tons in April and with 49,180 long tons in May, 1929.

The association estimates total domestic stocks of crude rubber on hand and in transit overland on May 31 at 146,179 long tons compared with 148,272 long tons as of April 30 and 97,192 long tons as of May 31, 1929. Crude rubber afloat for United States ports on May 31 is estimated at 68,168 long tons as against 63,261 long tons on April 30 and 65,793 long tons a year ago.

New Brokerage Rate

The Rubber Trade Association of N. Y. has approved a new rate for market brokerage recommended by the following committee of crude rubber brokers: J. S. Rodenbough, chairman, J. L. Handy, A. C. Forney, H. S. Delanie, and L. Proctor.

The new rate, on market transactions only, is ½ of 1 per cent per pound with maximum of $1.50 per ton brokerage to be paid by the seller. This rate was approved by the Rubber Trade Association of N. Y., and announced to the trade on June 20.

RUBBER AFLOAT TO THE UNITED STATES

All figures in long tons.

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
May 31.....	6,532	738	1,746	54	9,070
June 7.....	6,443	1,020	1,971	24	9,458
June 14.....	5,938	631	1,586	63	8,218
June 21.....	5,823	886	1,693	36	8,438

Rubber Scrap

TRADE in rubber scrap during the past month was extremely dull. This condition, one of long standing, is attributable to the reduced activity in rubber goods production. Prices for rubber scrap are very weak. Reclaimers are not interested in renewal of their stocks of scrap, and offers of materials at lowest figures are not taken up. Scrap is moving at a very slow rate, although some grades are in fair demand.

CONSUMERS' BUYING PRICES

Carload Lots

Delivered Eastern Mills
June 25, 1930

	Prices
Boots and Shoes	
Boots and shoes, black..100 *lb.*	$1.15 @$1.25
Untrimmed arctics....100 *lb.*	.70 @ .80
Tennis shoes and soles..100 *lb.*	.75 @ 1.00
Inner Tubes	
No. 1, floating.....*lb.*	.06⅝@ .06⅞
No. 2, compound.....*lb.*	.02¾@ .03
Red .....*lb.*	.02¾@ .02⅞
Mixed tubes .....*lb.*	.02⅞@ .03⅛
Tires	
Pneumatic Standard	
Mixed auto tires with beads .....*ton*	14.50 @15.50
Beadless .....*ton*	20.00 @21.00
Special auto tire stock (S.A.G.) .....*ton*	20.00 @21.00
Auto tire carcass.....*ton*	24.00 @25.00
Black auto peelings...*ton*	24.00 @25.00
Solid	
Clean mixed truck....*ton*	24.50 @25.50
Light gravity .....*ton*	27.00 @29.00
Mechanicals	
Mixed black scrap.....*lb.*	.00¾@ .01
Hose, air brake.....*ton*	15.00 @17.00
Garden, rubber covered..*lb.*	.00⅝@ .00¾
Steam and water, soft..*lb.*	.00½@ .00⅝
No. 1 red.....*lb.*	.02 @ .02¼
No. 2 red.....*lb.*	.01 @ .01½
White druggists' sundries..*lb.*	.02 @ .02½
Mechanical .....*lb.*	.01½@ .01⅝
Hard Rubber	
No. 1 hard rubber.....*lb.*	.10 @ .10½

BOOTS AND SHOES. Demand for this grade of scrap continues fair with prices tending to become somewhat easier. The level seems to have been reached, however, below which it will be extremely difficult to accumulate the scrap in quantity.

INNER TUBES. Prices on all grades of tubes have declined rather sharply, and the demand holds fair at the new levels. No. 2 gray and red tubes are in preferred demand both for domestic consumption and export.

TIRES. The consuming demand for tires is still dull and below normal. The same holds true concerning the supply. All grades of pneumatic tire scrap are offered at prices below those quoted a month ago.

SOLID TIRES. This grade because of the shortage of supply is quoted unchanged.

MECHANICALS AND HARD RUBBER. These grades are quoted unchanged with very light consuming demand.

Reclaimed Rubber

AS INDICATED in the tabulated statistics printed below, production and consumption of reclaim was the same in tonnage for May as for April. The consumption percentage of reclaim advanced in May about ¾ of a per cent, bringing the average in this respect to 44¼ per cent for the first five months of the year or 3¾ per cent below the monthly average for 1929.

The fact that this average is so well maintained is evidence that reclaim is established in rubber technology as an ingredient on its intrinsic merits. While its price is influenced by the market fluctuations of crude, its demonstrated technical value assures it a permanent place in rubber compounding practice.

Production of reclaim, which a month ago was at about 60 per cent of capacity, proceeded in June at about 50 per cent. This rate will probably average less in July as reclaimers are planning, in view of the relatively light consuming demand for their product, on stopping production for a vacation and stock taking interval of a week to ten days.

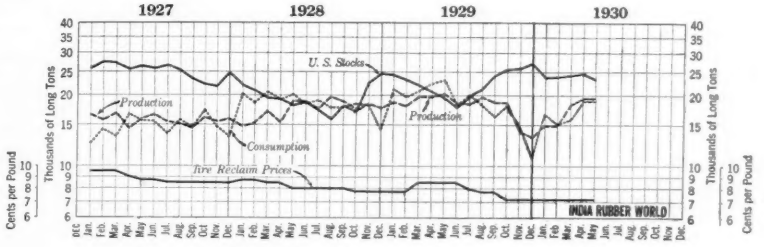
Prices on all grades of reclaim have declined from ¼- to ¾-cent per pound except in the case of mechanical blends, which rates as the lowest quality on the list.

Consumption of reclaimed rubber in the United States is estimated at 17,475 long tons for May, according to statistics compiled by The Rubber Manufacturers' Association. This compares with 17,321 long tons in April and 22,286 long tons in May, 1929.

New York Quotations

June 25, 1930

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black...	1.20	$0.10 @$0.10¼
red	1.20	.10 @ .10¼
Auto Tire		
Black	1.21	.06¼@ .06½
Black selected tires....	1.18	.06½@ .07
Dark gray	1.35	.08 @ .08¼
White	1.40	.10½@ .11
Shoe		
Unwashed	1.60	.06½@ .07
Washed	1.50	.08¾@ .09¼
Tube		
No. 1	1.00	.10½@ .11
No. 2	1.10	.08½@ .09
Truck Tire		
Truck tire, heavy gravity	1.55	.06½@ .07
Truck tire, light gravity	1.40	.06¾@ .07¼
Miscellaneous		
Red	1.35	.09½@ .10
Mechanical blends.....	1.60	.05 @ .05½



Production, Consumption, Stocks, and Prices of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925	132,930	137,105	35.6	13,203	4,571
1926	180,582	164,500	45.9	23,218	5,391
1927	189,144	178,471	47.6	24,980	8,540
1928	208,516	223,000	50.4	24,785	9,577
1929	219,057	224,253	47.9	27,464	12,721
1929					
January	18,685	21,068	49.1	24,394	941
February	18,094	19,829	47.7	23,305	1,028
March	19,984	20,068	46.7	22,076	1,344
April	19,899	21,574	47.3	20,680	1,498
May	20,385	23,176	47.1	19,479	1,299
June	18,416	18,141	42.0	17,980	961
July	18,387	20,236	48.7	19,679	1,202
August	19,787	18,230	47.6	22,309	860
September	18,660	16,416	47.2	24,984	657
October	18,968	18,024	51.8	25,474	830
November	14,363	14,742	53.4	26,080	1,232
December	13,429	11,089	47.1	27,464	869
1930					
January	15,010	16,785	45.8	24,241	954
February	15,847	14,918	45.5	24,241	1,203
March	17,400	15,616	43.2	24,415	1,048
April	17,828	17,321	43.0	24,592	740
May	17,812	17,473	43.7	23,356	939

* Stocks on hand the last of the month or year.
Compiled by Rubber Manufacturers Association.

Imports, Consumption, and Stocks

THE topmost of the accompanying graphs represents the closing prices of actual spot-ribbed smoked sheet transactions reported by the Rubber Trade Association of New York. Imports in May were 9,207 tons less than in April. Consumption in May, however, was essentially the same as in April, being 39,902 tons or 305 tons less than in May. Normally it should be greater as the June peak of tire production approaches. It is possible that the season's peak has already been reached, since manufacturing operations are now being adjusted to the present less active tire demand of the automobile industry. Henderson Rubber Reports, Inc., estimates June imports at 40,000 tons, June consumption at 32,000 tons, United States stocks on hand at the end of June at 140,000 tons, and stocks afloat at 55,000 tons.

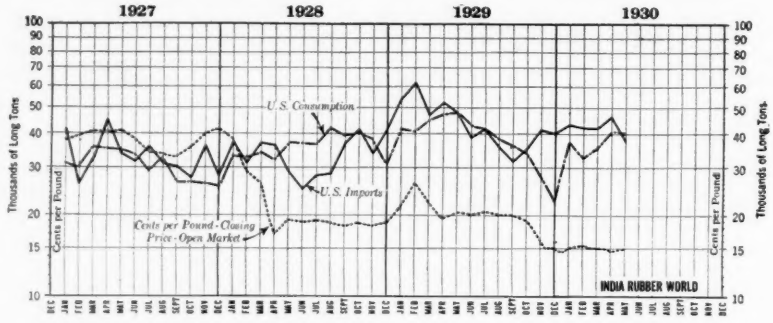
The curve of closing spot prices in the open market, which for the first five months of the year fluctuated between 15 and 16 cents, descended in June to 12 cents.

United States stocks of crude rubber on hand and afloat, also the combined London, Liverpool, Singapore, and Penang stocks are shown by the curves on the lower chart. Both are increasing. On June 1 the total domestic stocks were 214,347 tons, and the total foreign, 144,189 tons.

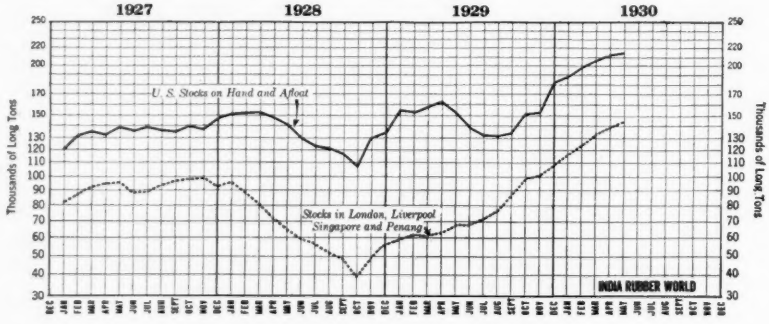
For the past three months the estimates of crude rubber consumption totaled 121,000 tons. Reported actual consumption for the same period was 116,023 tons. Reported consumption in the first five months of 1930 was 185,418 tons compared with 157,225 tons consumed in the last five months of 1929. If this gain is retained the consumption in 1930 will total midway between the tonnages of 1928 and 1929.

London stocks between May 24 and June 21 increased by 1,935 tons. The weekly record is as follows: May 31, 77,198 tons; June 7, 77,616 tons; June 14, 78,104 tons; June 21, 78,888 tons.

Liverpool stocks also advanced in the same interval by 3,582 tons. The weekly record of Liverpool stocks is: May 31, 25,526 tons; June 7, 25,320 tons; June 14, 26,646 tons; June 21, 27,354 tons.



United States Imports, Consumption, and Prices of Ribbed Smoked Sheets



United States, British and Malayan Rubber Stocks

United States Statistics of Rubber Imports, Consumption, and Stocks

Twelve Months	*Net Imports Tons	Consumption Tons	Stocks on Hand Tons	Stocks Afloat Tons	Total Domestic Stocks Tons	British and Malayan Stocks: London & Liverpool Tons	British and Malayan Stocks: Singapore & Penang Tons	British and Malayan Stocks: Total Tons
1925	385,596	388,000	50,985	52,421	103,406	6,328	18,840	25,168
1926	399,972	366,000	72,510	51,238	123,748	51,320	26,443	77,763
1927	403,472	373,000	100,130	47,938	148,068	66,261	25,798	92,059
1928	407,572	437,000	66,166	68,764	134,930	22,603	32,905	55,508
1929	527,327	464,644	105,138	62,389	167,527	73,253	35,548	108,801
1930								
January	44,093	36,669	126,068	61,863	187,931	81,300	33,468	114,768
February	41,373	32,726	134,790	63,404	198,194	87,100	37,550	124,650
March	42,339	35,914	141,843	63,646	205,489	93,500	38,129	131,629
April	46,997	40,207	148,272	63,261	211,533	99,870	39,880	139,750
May	37,790	39,902	146,179	68,168	214,347	102,936	41,253	144,189

*Including liquid latex, but not guayule.

United States Crude and Waste Rubber Imports for 1930 by Months

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1930	Total 1929	Balata	Miscellaneous	Waste
January ..... tons	46,042	362	747	76	10	125	...	47,362	52,305	127	748	35
February	42,510	275	788	66	14	75	...	43,728	64,538	130	543	144
March	44,002	332	894	37	15	150	...	45,430	53,824	123	738	20
April	48,727	179	881	53	12	75	...	49,927	54,171	87	628	107
May	39,620	444	530	..	1	150	...	40,745	49,180	109	909	87
Total, five months, 1930 ..... tons	220,901	1,592	3,840	232	52	575	...	227,192	.....	576	3,566	393
Total, five months, 1929 ..... tons	*267,910	...	5,619	167	191	118	13	.....	274,018	407	5,463	1,409

* Latex included.
Compiled from Rubber Manufacturers Association statistics.

Compounding Ingredients

IN general the demand for rubber compounding ingredients has fallen off noticeabiy in the past month, owing to lowering of tire production schedules and closing of plants for repair and vacation purposes.

Tire production in the Akron district is estimated at 65 per cent of capacity. Production in footwear, insulation, and proofing is on a moderate seasonal scale. Mechanical rubber goods manufacturers are maintaining a fair output based on the general industrial activity which is not quite up to normal. Heels have become very competitive, and output is somewhat restricted.

ACCELERATORS. Trade in accelerators of the leading brands is increasing despite the present slowness of business in general. The latest addition to the list is Barak, an accelerator-activator of a new type for which unusual qualities are claimed by the makers as a preventative of reversion on overcures.

The total consumption of accelerators is less than it was a year ago because there are very few stocks in which organic accelerators are not now used. Hence little opportunity exists for more widespread use to counteract the effect of the decreased production of goods. Individual accelerators are following divergent trends. Consumption of D. P. G. and D. O. T. G. has decreased more rapidly than the total consumption of accelerators, while the consumption of the aldehydeamine accelerators especially the butyraldehyde derivatives has increased. The accelerator prices were deflated a few years ago when guanidine dropped from over $1 to the present level of 30 to 40 cents a pound. Most other accelerators also declined in the general movement although in varying proportion. No tendency is noted for manufacturers to drop accelerator prices below the present levels.

ANTIOXIDANTS. Sales of these materials are reported as being well maintained with new customers appearing each month for the old-established makes.

The consumption of antioxidants is increasing in spite of the relative inactivity of the rubber industry because of the continued growth of their use in cheaper goods.

CARBON BLACK. Stocks are ample to meet the current demand and are kept closely adjusted to the present needs of tire manufacturing schedules. Deliveries have been revised to contract customers on the regular grades of carbon to the basis of 4½ cents per pound, f. o. b., Texas basis. This is done merely to keep the contract trade in proper balance as regards the market situation, but it is not at all justified from the standpoint of producing conditions.

CLAY. Sales on clay, which ranks as the least expensive reenforcing pigment, are as good as can be expected under present conditions. Prices have not changed since last month.

LITHARGE. For the past month trade in litharge was dull, and demand on a hand-to-mouth basis by consumers in all lines, including the rubber industry. No change occurred in prices of this material.

LITHOPONE. Good business from the rubber trade at the first of the month lessened somewhat as the month advanced. Prices are steady and unchanged.

MINERAL RUBBER. No change in price has occurred. The demand is steady, and sales are maintaining good volume considering the moderate gait of rubber goods production.

V. M. P. NAPHTHA. Prices hold steady. Sales, which were fair early in June, fell off somewhat at the close.

SOFTENERS. This classification of ingredients embraces a wide variety of materials of special adaptation under the general designations. All are sharing in the generally moderated demand. Stearic acid, rated both as softener and stabilizer, has declined in price.

ZINC OXIDE. The call for this essential ingredient by the rubber trade is reported generally fair with prices steady and unchanged.

New York Quotations

June 25, 1930

Abrasives

Pumice stone, pwd.	lb.	$0.02½	@$0.04
Rottenstone, domestic	ton	23.50	@28.00

Accelerators, Inorganic

Lead, carbonate	lb.	.07¾	@
red	lb.	.09	@
sublimed blue	lb.	.07¼	@
sublimed white	lb.	.07¼	@
super-sublimed white	lb.	.07¼	@
Lime, R. M. hydrated	ton		@
Litharge	lb.	.08	@
Magnesia, calcined, heavy	ton		@
carbonate	lb.	.06	@ .07
Orange mineral A.A.A.	lb.	.11	@

Accelerators, Organic

A-1	lb.	.22	@ .27
A-5-10	lb.	.31	@ .36
A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.	.80	@ .95
Accelerator 49	lb.	.35	@ .42
Aldehyde ammonia	lb.	.65	@ .70
Anhydro formaldehyde aniline	lb.	.40	@ .42½
Butene	lb.		@
Captax	lb.		@
Crylene	lb.		@
paste	lb.		@
D. B. A.	lb.		@
D. O. T. G.	lb.	.42	@ .49
D. P. G.	lb.	.30	@ .37
Ethylidine aniline	lb.	.45	@ .47½
Heptene	lb.		@
base	lb.		@
Hexamethylenetramine	lb.	.58½	@ .61
Lead oleate, No. 999	lb.	.15	@
Witco	lb.		@
Lithex	lb.		@
Methylene dianiline	lb.	.37½	@ .40
Monex	lb.		@
Phenex	lb.	.70	@ .75
Pipsol	lb.	4.00	@ 4.50
Plastone	lb.		@
R-2	lb.	1.75	@ 2.15
base	lb.	4.50	@ 5.00
R & H 40	lb.	.40	@ .42½
50	lb.	.40	@ .42½
Safex	lb.		@
S-P-D-X	lb.	.70	@ .75
Super-sulphur No. 1	lb.		@
No. 2	lb.		@
Tensilac 39	lb.	.40	@ .42½
Thermlo F	lb.		@

Accelerators, Organic *(Continued)*

Thiocarbanilid	lb.	$0.25½	@$0.28½
Trimene	lb.		@
base	lb.		@
Tuads	lb.		@
Ureka	lb.	.70	@ 1.00
V. G. B.	lb.		@
Waxene	lb.	.30	@ .40
Z. B. X.	lb.		@
Z-88	lb.	.50	@ .60
Zimate	lb.		@

Acids

Acetic 28% (bbls.)	100 lbs.	3.88	@ 4.13
glacial (carboys)	100 lbs.	14.18	@14.43
Sulphuric, 66°	ton	15.50	@

Alkalies

Caustic soda, 76% solid	100 lbs.	2.75	@ 2.90

Antioxidants

Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Albasan	lb.		@
Antox	lb.		@
Oxynone	lb.	.68	@ .90
Resistox	lb.	.54	@ .65
Stabilite	lb.	.57	@ .62
Stabilite-Alba	lb.	.70	@ .75
Sunproof	lb.		@

Binders, Fibrous

Cotton flock, dark	lb.		@
dyed	lb.		@
white	lb.		@

Colors

BLACK

Bone	lb.	.09½	@
Carbon (see Reenforcers)			
Drop (bbls.)	lb.	.05½	@ .15
Lampblack (commercial)	lb.	.07	@ .08

Colors *(Continued)*

BLUE

Huber, brilliant	lb.	$3.50	@$4.00
Prussian	lb.	.35	@ .37
Ultramarine	lb.	.06	@ .30

BROWN

Huber, mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Chromium oxide	lb.	.33	@ .34
Huber, brilliant	lb.	3.75	@ 4.25

ORANGE

Huber, Persian	lb.	.50	@ 1.00

RED

Antimony			
Crimson, R. M. P. No. 3	lb.	.48	@
Sulphur, free	lb.	.52	@
7-A	lb.	.35	@
Sulphuret, golden			
No. 60	lb.	.16	@ .20
Z-2	lb.	.22	@
Huber, brilliant	lb.	1.35	@ 1.85
Iron Oxides			
bright pure domestic	lb.	.10½	@
bright pure English	lb.	.14	@
bright reduced English	lb.	.10	@
bright reduced domestic	lb.	.08½	@
Indian (maroon), pure domestic	lb.	.10½	@
Indian (maroon), pure English	lb.	.11	@
Indian (maroon) reduced English	lb.	.09½	@
Indian (maroon) reduced domestic	lb.	.08½	@
Oximony	lb.	.13¾	@
Spanish red oxide	lb.	.03	@
Sunburnt red	lb.	.14	@
Venetian red	lb.	.02	@ .05

WHITE

Lithopone	lb.	.05½	@ .05¾
Albalith	lb.	.05¾	@ .05½
Azolith	lb.	.05¾	@ .05¾
Grasselli (50 lb. bags)	lb.	.05¼	@ .05½
(400 lb. bbls.)	lb.	.05½	@ .05¾

Colors—(Continued)

WHITE—(Continued)

Titanium oxide, pure	lb.	$0.20	@$0.22
Titanox "B"	**lb.**	**.07¼**	**@ .07¾**
Titanox "C"	lb.	.07¾	@ .08¼

Zinc Oxide

AAA (lead free) (bbls.)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	**lb.**	**.06½**	**@ .07**
ZZ (leaded)	**lb.**	**.06½**	**@ .06¾**
Z (8% leaded)	**lb.**	**.06½**	**@ .06¾**
Cryptone	lb.	.07¼	@ .07½
Green seal	lb.	.10¾	@ .10¾
Kadox, black label	lb.	.10¾	@ .10¾
blue label	lb.	.09¾	@ .09¾
red label	lb.	.08	@ .08¼
Red seal	lb.	.09¼	@ .09½
Special	lb.	.07	@ .07½
White seal	lb.	.11¾	@ .11¾
XX green	**lb.**	**.07**	**@ .07¼**
XX red	lb.	.06½	@ .06¾
Zinc sulphide	lb.	.16	@ .16¼

YELLOW

Cadminum sulphide	lb.	.95	@ 1.40
Chrome	**lb.**	**.17**	**@ .17½**
Huber, canary	lb.	2.80	@ 3.30
Ochre, domestic	lb.	.01½	@ .02½
French	lb.	.03	@
Oxide, pure	**lb.**	**.09**	**@**
Zinc, C. P., imported	**lb.**	**.21**	**@**

Factice—See Rubber Substitutes

Fillers for Pliability

Flex	**lb.**		**@**
Fumonex	lb.	.04½	@ .08
P-33	lb.		@
Thermax	lb.		@
Uncompressed	lb.	.05	@ .10
Velvetex	lb.	.04	@ .06

Fillers, Ordinary

Asbestine	ton	13.40	@13.50
Baryta white (f.o.b. St. Louis, bbls.)	**ton**	**23.00**	**@**
Baryta white (f.o.b. St. Louis, paper bags)	**ton**	**22.20**	**@**
Barytes, pure white	ton		@
off color	ton		@
medium	ton		@
Foam "A" (f.o.b. St. Louis, bbls.)	**ton**	**23.00**	**@**
Foam "A" (f.o.b. St. Louis, bags)	**ton**	**23.00**	**@**
Basofor	**lb.**	**.04½**	**@**
Blanc fixe, dry	**lb.**	**.04½**	**@**
pulp	**ton**	**42.50**	**@45.00**
Infusorial earth	**ton**	**35.00**	**@**
Slate flour, gray (fact'y)	ton	7.00	@

Whiting

Domestic	**100 lbs.**	**1.00**	**@**
English cliffstone	**100 lbs.**	**1.50**	**@**
Imported chalk	100 lbs.	.90	@ 1.00
Paris White, English cliffstone	**100 lbs.**	**1.50**	**@ 3.50**
Quaker	**ton**		**@**
Sussex	ton		@
Witco (l. c. l.) (f.o.b. New York)	ton		@

Finishes

Mica, amber	lb.		@
Shellac, fine orange	lb.	.60	@
Starch, corn	100 lbs.	3.62	@ 3.82
potato	lb.	.05½	@ .06

Inflating Material

Ammonium carb., pwd.	lb.	.09½	@ .10
lump	lb.	.10	@ .11

New York Quotations

June 25, 1930

Lubricants

Soapbark (cut)	lb.	$0.10	@$0.11
Soapstone	ton	15.60	@22.00
Talc, domestic	lb.	.01¼	@
French	**ton**	**18.00**	**@22.00**
Pyrax A	**ton**		**@**

Mineral Rubber

Fluxrite (solid)	lb.	.05	@
Genasco (fact'y)	**ton**	40.00	@42.00
Gilsonite (fact'y)	**ton**	**37.14**	**@39.65**
Granulated M. R.	**ton**		**@**
Hydrocarbon, hard	**ton**		**@**
Ohmlac Kapak, M. R. (f.o.b. fact'y)	ton	60.00	@
M. 4 (f.o.b. fact'y)	**ton**	**175.00**	**@**
Paradura (fact'y)	**ton**	**62.50**	**@65.00**
Parmr Grade 1	ton	24.00	@28.00
Parmr Grade 2	ton	24.00	@28.00
Pioneer, M. R., solid fact'y	**ton**	**40.00**	**@42.00**
M. R. granulated	**ton**	**50.00**	**@52.00**
Robertson, M. R., solid (fact'y)	**ton**	**34.00**	**@80.00**
M. R. granulated	**ton**	**38.00**	**@80.00**

Oils

Kerosene	gal.	.113	@
Mineral	gal.	.20	@
Poppy seed oil	gal.	1.70	@
Rapeseed, refined	lb.	.66	@ .67
Red oil, distilled	lb.	.09½	@ .10½
Rubber process	gal.	.25	@
Spindle	gal.	.30	@

Reenforcers

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks, l.c.l.)	ton	24.50	@
Carbon Black			
Aerfloted arrow	lb.	.05½	@ .11
Century (works, La., c. l.)	**lb.**		**@**
Compressed	lb.	.05	@ .10
Disperso (works, La., c. l.)	**lb.**		**@**
Excello	**lb.**	**.05**	**@**
Gastex (f.o.b. fact'y) contracts	**lb.**	**.04**	**@ .04¾**
carload	**lb.**	.05½	@
less carload	lb.	.07	@
Micronex	lb.	.05½	@ .11
Palmer gas black	lb.	.05	@
Supreme	lb.	.05	@
Clays			
Blue Ridge, dark	**ton**		**@**
China	lb.	.01¼	@
Dixie	**ton**		**@**
Langford	**ton**		**@**
Par	ton		@
Perfection	ton		@
Suprex	**ton**	**8.00**	**@20.00**
Glue, high grade	lb.	.25	@ .35

Rubber Substitutes or Factice

Black	lb.	.08	@ .13
Brown	lb.	.08	@ .14
White	lb.	.09	@ .15

Softeners

Burgundy pitch	100 lbs.	6.00	@
Atlas	100 lbs.	6.50	@
Corn oil, crude	lb.	.09	@
Cottonseed oil	lb.	.0810	@
Coumarone resins	lb.	.10	@ .11
Cycline oil	lb.	.25	@ .34
Degras	lb.	.03¼	@ .04½

Softeners (Continued)

Fluxol	ton	$18.00	@$80.00
Fluxrite (fluid)	**lb.**	**.05**	**@**
Laurex, ton lots	**lb.**		**@**
Palm oil (Lagos)	lb.	.05¾	@ .06
Palm oil (Niger)	lb.	.05⅝	@
Palm oil (Witco)	lb.		@
Para-flux	**gal.**	**.17**	**@**
Petrolatum, snow white	**lb.**	**.08**	**@ .08½**
Pigmentar	gal.	.17	@ .22
Pigmentaroil (tank cars, factory)	**gal.**	**.18**	**@**
(bbls., drums)	gal.	.23	@
Pine oil, dest distilled	gal.	.55	@ .58
Pine pitch	**bbl.**	**7.00**	**@ 8.00**
Pine tar (retort)	bbl.	13.50	@14.00
Rosin K (bbls.)	280 lbs.	6.65	@
Rosin oil compounded	gal.		@
No. 3, deodorized	gal.	.58	@
No. 556, deodorized	**gal.**	**.49**	**@**
Rubberseed, drums	lb.	.09½	@
Rubtack	lb.		@
Stearex	lb.	.14	@ .18
Stearic acid, double pressed	**lb.**	**.14**	**@ .14½**
Tackol	lb.	.09	@ .18
Tonox	lb.		@
Witco No. 20	gal.		@
Woburn oil	**lb.**	**.05½**	**@ .06**
Wobonite No. 94	lb.	.03½	@

Solvents

Benzol (90% drums)	gal.	.26	@
Carbon bisulphide (drums)	lb.	.05½	@ .12
tetrachloride (drums)	lb.	.06½	@ .10
Dip-Sol	gal.	.12	@
Dryolene, No. 9	gal.	.09½	@
Gasoline			
No. 303			
Drums, c. l.	**gal.**	**.20**	**@**
Tankcars	**gal.**	**.16**	**@**
Rub-Sol	gal.	.08	@
Solvent naphtha (tanks)	gal.	.28	@
Stod-Sol	gal.	.09	@
Turpentine, Venice	lb.	.20	@
dest distilled	gal.	.40	@ .41

Vulcanizing Ingredients

Sulphur

Rubber sulphur	100 lbs.	1.75	@ 2.50
Soft rubber (c.l.)	**100 lbs.**		**@**
(l.c.l.)	**100 lbs.**		**@**
Sulphur chloride	lb.	.03½	@ .04
Superfine commercial flour (bbls.)	**100 lbs.**	**2.55**	**@ 3.10**
(bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine, 100 lbs.		1.75	@
Tube brand, velvet	100 lbs.	2.30	@
Velvet flour (240 lb. bbls.)	**100 lbs.**	**2.95**	**@ 3.50**
(150 lb. bags)	**100 lbs.**	**2.60**	**@ 3.15**
Vandex	**lb.**		**@**

(See also Colors—Antimony)

Waxes

Beeswax, white, commercial	lb.	.55	@
carnauba	lb.	.33	@
ceresin, white	lb.	.12½	@
montan	lb.	.06½	@
ozokerite, black	lb.	.28	@
green	lb.	.28	@

Paraffin

122/124 crude, white scale	lb.	.03¼	@
124/126 crude, white scale	lb.	.03¼	@
125/127 fully refined	lb.	.04¼	@

Miscellaneous Supplies

Mold Solution

Rusco mold paste	lb.	.12	@ .30

Lineman's Rubber Gloves[1]

The quality demanded of lineman's rubber gloves is particularly exacting because the worker's life depends upon how well the gloves protect him from high voltages. Insulating, great tensile strength, and toughness are the prime requirements. The accompanying recipe produces a superior lineman's glove because the stock has high tensile strength with medium stiffness, high elongation, superior aging, extreme pliability, and high resistance to electrical breakdown. Its very low carbon black content and freedom from metallic oxides insure superior electrical insulating properties. It is preserved against deterioration from natural aging as well as the aging caused by ozone surrounding high voltage conductors.

In addition the cure is unusually short for this type of goods. The stock having low sulphur and no materials of heavy gravity, readily forms a dipping cement and one that does not settle within a reasonable length of time.

LINEMAN'S GLOVE FORMULA

Smoked sheet rubber	100.0
Carbon black	2.5
Sulphur	2.5
R & H 50 (accelerator)	2.0
Mineral rubber	5.0
Zinc carbonate	4.0

Cure 30 minutes at 50 pounds = 298° F.

[1]Data from The Roessler & Hasslacher Chemical Co., 10 E. 40th St., New York, N. Y.

New York Quotations
June 25, 1930

Drills

38-inch 2.00-yard	*yard*	$0.14¼@
40-inch 3.47-yard		.08½@
50-inch 1.52-yard		.19⅜@
52-inch 1.90-yard		.15⅞@
52-inch 2.20-yard		.13⅜@
52-inch 1.85-yard		.16¼@

Ducks

38-inch 2.00-yard D. F.	*yard*	.15 @
40-inch 1.45-yard S. F.		.20 @
72-inch 1.05-yard D. F.		.31 @
72-inch 16.66-ounce		.34¼@
72-inch 17.21-ounce		.35⅜@

MECHANICAL

Hose and belting	*pound*	.32 @

TENNIS

52-inch 1.35 yard	*yard*	.22⅜@

Hollands

RED SEAL

36-inch	*yard*	.14 @
40-inch		.15 @
50-inch		.19½@

GOLD SEAL

40-inch, No. 72	*yard*	.18½@
40-inch, No. 80		.19½@

Osnaburgs

40-inch 2.35-yard	*yard*	.12¾@
40-inch 2.48-yard		.12⅛@
40-inch 3.00-yard		.09⅞@
40-inch 10-oz. part waste	*lb.*	.15⅛@
40-inch 7-oz.	*lb.*	.10¾@
37-inch 2.42-yard	*yard*	.12⅜@

Raincoat Fabrics

COTTON

Bombazine 64 x 60	*yard*	.10 @
Bombazine 60 x 48		.09 @
Plaids 60 x 48		.11½@
Plaids 48 x 48		.10½@
Surface prints 64 x 60		.12½@
Surface prints 60 x 48		.11½@
Print cloth, 38½-in., 60 x 48		.04¾@
Print cloth 38½-in., 64 x 60		.05¾@

Sheetings, 40-inch

48 x 48, 2.50-yard	*yard*	.09⅞@
48 x 48, 2.85-yard		.08⅝@
64 x 68, 3.15-yard		.09½@
56 x 60, 3.60-yard		.08¼@
44 x 48, 3.75-yard		.07 @
44 x 40, 4.25-yard		.06¼@

Sheetings, 36-inch

48 x 48, 5.00-yard	*yard*	.05¾@
44 x 40, 6.15-yard		.04¾@

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Peeler, karded	*pound*	.40 @

BUILDER 23/11

Peeler, karded	*pound*	.40 @

BUILDER 10/5

Peeler, karded	*pound*	.34 @

CORD 23/5/3

Peeler, karded	*pound*	.40 @

CORD 23/4/3

Peeler, karded	*pound*	.42 @

CORD 23/3/3

Peeler, karded	*pound*	.45 @

CORD 15/3/5

Peeler, karded	*pound*	.38 @

CORD 13/3/3

Peeler, karded	*pound*	.37 @

LENO BREAKER

8-oz. Peeler, karded	*pound*	.40 @
10-oz. Peeler, karded		.40 @

CHAFER

9.5-oz. Peeler, karded	*pound*	.43 @
12-oz. Peeler, karded		.42 @
14-oz. Peeler, karded		.34 @

Cotton and Fabrics

"A RESETTING of the mythological story of Atlas bending under the weight of the world is now under way," says the *Wall Street Journal*. "The world is bales of cotton, and the modern Atlas is the government's law-made agent to uphold the burden. The Census Bureau's report on domestic consumption of cotton, the stocks in mills and warehouses, the shrinking exports and the improving crop conditions are pointing to the size of the burden whose weight is being registered in declining price."

COTTON BULL POINTS

1. Curtailing output by mills in all textile sections.
2. Industrial users of cotton products becoming more active, with expected larger requirements from this source.
3. Cotton now a more popular fashion fabric, with 65 per cent more manufacturers making cotton dresses than a year ago.
4. Abandonment of the Federal Reserve Farm Board policy of a fixed loan base, and definite declaration of its plans for carrying the excess crop through the Cotton Stabilization Board.
5. Recommendations that 55 hours a week be run day shift and 50 hours night, with no overtime, endorsed by mills representing 73 per cent of the spindles in going plants in the country.

COTTON BEAR POINTS

1. Lack of normal consumer purchasing power.
2. No guarantee that overtime will not be resumed as soon as demand improves.
3. Small acreage reduction.
4. Exports declined 22 per cent for April and 15 per cent for the nine months of the present season.
5. Drastic curtailment by Japanese cotton mills, decreasing consumption of American cotton.
6. Advance cotton reports from Moscow showing on June 10 Soviet farmers completed cotton planting on 4,232,500 acres, an increase of 63 per cent over 1929 acreage.
7. Drop in price of silver further retarding purchase of American cotton.
8. Report of Association of Cotton Textile Merchants for May showing: (a) Sales for the month at 66.9 per cent of production. (b) Shipments 97.9 per cent of production. (c) Stock increase of 1.3 per cent. (d) Unfilled order decrease of 23.9 per cent.

If the declining prices have been a measure, they have indicated a tremendous burden for poor Atlas. New low levels were established day after day, and cotton suffered with other commodities.

The general depression in business is responsible for this condition, and when improvement becomes evident, considerable buying will be necessary for mill accounts.

A good many reasons for the drastic declines in the stock market were advanced, with the new tariff receiving a good deal of blame, perhaps undeservedly. In view of that fact, it is interesting to note what Moody's Service had to say in reference to the effect of the tariff on cotton in its June 23 report.

"The most notable alteration, so far as raw materials for the textile industry are concerned, is the removal of long-staple cotton from the free list, and the application of a duty of 7 cents a pound. Imports in 1929 amounted to almost 52,000,000 pounds, originating chiefly in Egypt. The new classification will undoubtedly tend to decrease imports but should not exercise any great effect on cotton prices in view of the many other market influences."

Bad news flooded the market. Silver dropped to new low levels, cutting down the purchasing power. Consequently the demand for cotton from China, and local consumption in May dropped to 473,917 running bales as compared with 532,382 in April and 668,650 in May, 1929.

Cool weather retarded the young cotton early in the month, but later conditions were favorable and point to a large crop. Of course, unfavorable weather can still damage much cotton, and the weevil pest, while no greater than in previous years, is ever present.

At present, the outlook is dull, with no change expected for several months.

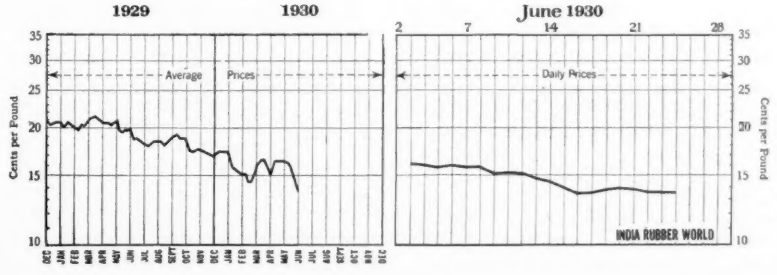
Week ended May 31: Technical conditions made the market an unsteady affair early in the week, but a wet map steadied prices a bit for the holiday.

"The May contract," said Harriss & Vose on May 24, "in the liquidation of which the largest amount of cotton ever delivered upon an exchange was received by the cotton cooperative associations, passed off the board last Friday. In order that the record may be properly entered in cotton history it should be noted that out of a total of 575,000 bales received by them, approximately 375,000 bales were delivered by one spot firm, approximately an additional 100,000 by two other firms, and the remaining 100,000 by the rest of the world."

They also asked the Farm Board to announce its plans in reference to the large carry-over of the present cotton crop.

The New York Cotton Exchange an-

Daily Prices of Spot Middling Upland Cotton.



nounced on the 27th that world consumption of American cotton in April totaled 1,065,000 bales against 1,063,000, revised, in March, 1,288,000 in April last season, and 1,161,000 in April two seasons ago. For the nine months from August 1 to April 30 world consumption of American cotton was 10,286,000 bales against 11,435,000 in the corresponding period last season and 11,966,000 two seasons ago.

Prices at the close on May 29 were:

Position	High	Low	Close	Yesterday's Close
July	16.13	16.03	16.13	16.08
Oct.	15.21	15.07	15.21	15.09
Dec.	15.23	15.11	15.23	15.13
Jan.	15.24	15.13	15.23	15.15
Mar.	15.19	15.04	15.19	15.02

Week ended June 7: The drop in the price of silver and the weather reports helped send cotton down, and the announcement by the Federal Reserve Board that it had formulated a definite plan for carrying the huge surplus accumulated served to steady the market.

Prices firmed toward the end of the week, but as Pynchon & Co. said on June 6, "We are of the belief that the advance in cotton prices is a result of a firmer technical position and will prove only temporary."

The market is susceptible to the slightest change in technical conditions. On the 3rd, for instance, H. Hentz & Co. reported that the "feature at the opening was the selling of March, presumably for Japanese account. There was also professional selling and liquidation with the support coming principally from trade shorts and continental trade buying on a scale down. The factors mentioned in connection with the decline were the continued favorable weather, the weakness in silver, and the further decline in silk, which is supposed to have been responsible for the Japanese selling."

The announcement by the Federal Reserve Board was to the effect that a stabilization corporation would be formed for cotton, similar to that formed for wheat. This corporation will take over the cotton holding of the cooperatives. The board had given commitments to the cotton cooperatives to the amount of $50,548,000 up to March 15, which is about the amount to be involved. A further change in policy was revealed when the chairman announced that the Federal Farm Board would loan from 75 to 80 per cent of the cash market price on wheat and cotton for the new crop, instead of placing an arbitrary figure as it did in the past season.

Prices on June 7 follow:

Position	High	Low	Close	Yesterday's Close
July	15.68	15.60	15.60/62	15.75
Oct.	14.44	14.34	14.34/35	14.50
Oct.	14.12	14.03	14.03/05	14.20/21
Dec.	14.53	14.41	14.42	14.59
Dec.	14.23	14.14	14.14	14.32
Jan.	14.50	14.42	14.42	14.58
Jan.	14.22	14.15	14.15/16	14.31/33
Mar.	14.40	14.32	14.33	14.47/49

Week ended June 14: In 1928 the lowest price for cotton was 21 cents. In 1929, it was 19 cents. In 1930 a decline that started with the beginning of the year culminated in the current week in a new low level below 14 cents.

Weather conditions were closely watched because of their effect on the new crop, which is about a week late because of cool weather in all but a few sections. Later reports showed good weather. This had a bearish effect on the market.

"The report of the Association of Cotton Textile Merchants of New York was even more unfavorable than expected," declared H. Hentz & Co., on June 11. "The period covered was for five weeks, and the total production in yards was only slightly greater than in April which was for four weeks, and even with production curtailed, sales amounted to but 66.9 per cent of production."

According to G. A. Sloan, president of the Cotton-Textile Institute of New York, in Atlanta for a conference with mill executives from Georgia and adjoining states, 73 per cent of all the mills in the United States have endorsed the "55-50" maximum hours for labor and machinery. This recommendation, looking to greater regularity in employment, has gained national recognition as the most constructive movement that has come from within the cotton industry during the past decade. Prices on June 14 were:

Position	High	Low	Close	Yesterday's Close
July	13.70	13.24	13.34	13.85/92
Oct.	13.31	12.97	12.97/13	13.39/40
Oct.	13.07	12.75	12.75	13.15/20
Dec.	13.48	13.09	13.09/10	13.55/57
Dec.	13.30	12.88	12.88/94	13.34/39
Jan.	13.45	13.13	13.13	13.50
Jan.	13.26	12.92	12.92	13.36/39
Mar.	13.47	13.10	13.10/11	13.50/51

Week ended June 21: On Monday cotton broke 37 to 51 points under heavy liquidation to reach new lows. July contracts sold down to 13.24 cents, or $3 a bale below the previous Saturday's closing quotations. There was a slight rally the next day, but weather reports of showers in the East brought selling so that the close was unchanged after a good advance.

On the 18th the market rallied after selling at new lows. July recovered from 13.20 cents up to 13.61 cents and the new October from 12.50 cents to 12.94 cents. Some of the selling was supposed to have been induced by the early announcement that R. M. Hooper & Co. was unable to meet its obligations. Favorable crop news, however, was the chief factor responsible for selling.

For the close of the week highly favorable weather reports and unfavorable outside conditions made for losses of $2 a bale. The report from Memphis, however, stated that young cotton was suffering from a long drought, and a severe crop impairment was feared. Georgia cotton showed progress with moderate temperatures, and with warmer weather in Texas the crop there also was making a valiant effort to recover ground lost during two months of freakish weather.

Closing prices at the close on June 21 were:

Position	High	Low	Close	Yesterday's Close
July	13.76	13.51	13.60	13.94/95
Oct.	13.40	13.16	13.26/27	13.54/55
Oct.	13.07	12.85	12.97/98	13.25/28
Dec.	13.56	13.34	13.43	13.71/73
Dec.	13.25	13.04	13.14/17	13.42/44
Jan.	13.55	13.38	13.50	13.76/78
Jan.	13.25	13.06	13.17/18	13.46
Mar.	13.46	13.28	13.39	13.69/70
May	13.61	13.45	13.52	13.82

On June 23 cotton broke through for losses of 30 to 35 points, but recovered in the late afternoon. Final prices, however, were off 12 to 21 points from the previous close. Weak cables and good weather over the week-end was responsible for the decline.

On June 24 July cotton dropped a dollar a bale. Anticipation of a large number of "notices" being tendered on the 25th was partly responsible for the decline, while the unfavorable action of Liverpool was another depressing factor. Private cables here from the milling conditions in Germany, Great Britain, and Japan accounted for the continued limited foreign demand for our spot cotton.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
May 31	16.22
June 7	15.93
June 14	14.80
June 21	13.73

Staple Cotton

Staple crops everywhere seem to be doing well, and there is very little spinner demand. The duty of 7 cents a pound on 1⅛-inch and longer staples now effective in the new tariff has found spinners and merchants well supplied with foreign staple cottons, and it may be some months before the full effect of this duty is seen. As yet spot Egyptians have not responded to the tariff as they should. This, no doubt, is due partly to the big discount at which new crop Egyptians can be purchased.

Cotton Fabrics

The falling price of cotton aids cotton manufacturers in reducing trade losses. It is believed that at present market prices consumers of fabrics will be interested to cover some of their future requirements and average up or down from this level. This should soon cause a better demand for future delivery and make trading more active.

Ducks, Drills, and Osnaburgs. Market conditions are much the same as they were a month ago. The receding market for the raw material has retarded placing contracts for these products.

Raincoat Fabrics. Business in raincoat fabrics is slightly better than it was last month. A few orders are being placed but in very small quantities. Plaids and surface prints remain unchanged in price. Bombazines and 38½-inch print cloth have declined slightly.

Sheetings. In view of the unsettled state of the commodity the market for sheetings continues to be very inactive without developments of interest.

Tire Fabrics. Conditions of trade in these fabrics are not very satisfactory. Usually the peak demand of the year for tire fabrics occurs in June, but production of tires is much below what it should be at this time of the year and is reflected in reduced fabric demand. Most of the buying for the past two months was on Egyptian fabrics to anticipate the effect of the new tariff. Some of the tire companies are planning to shut down for the week in which the fourth of July occurs. Considering the time of the year, this is not a very good indication.

Dominion of Canada Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	March, 1930		Twelve Months Ended March, 1930	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.	8,457,139	$1,378,906	73,327,150	$14,711,057
Rubber recovered	1,908,900	117,015	17,086,800	1,148,065
Rubber and gutta percha scrap	578,900	13,423	6,784,700	232,584
Balata	2,849	1,157	12,823	4,210
Rubber substitutes	35,500	4,605	1,710,000	148,192
Totals	10,983,288	$1,515,106	98,921,473	$16,244,108
PARTLY MANUFACTURED				
Hard rubber sheets and rods	115,661	$10,483	213,123	$54,640
Hard rubber tubes	.....	994	.....	14,739
Rubber thread not covered	22,216	20,199	263,199	249,924
Totals	137,877	$31,676	476,322	$319,303
MANUFACTURED				
Belting	.....	$19,853	.....	$197,363
Hose	.....	23,798	.....	277,543
Packing	.....	11,611	.....	67,480
Boots and shoes.....*pairs*	2,711	4,219	57,106	67,618
Clothing, including waterproofed	.....	84,453	.....	551,759
Elastic, round or flat	.....	.....	....	.....
Gaskets	.....	1,497	.....	19,633
Gloves	.....	1,524	.....	19,052
Hot water bottles	.....	2,065	.....	46,724
Tires, bicycle.....*number*	2,087	1,636	32,638	17,451
Pneumatic .....*number*	3,050	29,516	21,082	285,343
Inner tubes.....*number*	973	1,337	3,871	9,882
Solid for automobiles and motor trucks.....*number*	93	6,093	903	27,749
Other solid tires	.....	4,672	.....	21,404
Mats and matting	.....	14,081	.....	103,000
Cement	.....	10,097	.....	65,647
Golf balls .....*dozen*	10,857	23,502	34,636	94,040
Heels .....*pairs*	135,678	5,837	1,670,514	76,103
Other rubber manufactures	.....	150,721	.....	1,514,124
Totals	.....	$396,512	.....	$3,461,905
Totals, rubber imports	.....	$1,943,294	.....	$20,025,316

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Waste rubber	$8,539	.....	$231,658	.....
Totals	$8,539	.....	$231,658	.....
MANUFACTURED				
Belting	$40,243	.....	$595,072	.....
Canvas shoes with rubber soles	746,686	.....	6,517,089	.....
Boots and shoes	129,181	.....	3,469,303	.....
Clothing, including waterproofed	4,787	.....	34,113	.....
Hose	18,768	.....	269,196	.....
Tires, bicycle	692	.....	10,003	.....
Pneumatic	1,570,137	.....	15,873,678	.....
Inner tubes	213,050	.....	2,156,243	.....
Solid	1,504	.....	113,301	.....
Other rubber manufactures	422,127	$12,937	2,978,697	$130,513
Totals	$3,147,175	$12,937	$32,016,695	$130,513
Totals, rubber exports	$3,155,714	$12,937	$32,248,353	$130,513

London Stocks, April, 1930

	Landed for April Tons	Delivered for April Tons	Stocks April 30 1930 Tons	1929 Tons	1928 Tons
LONDON					
Plantation	10,590	4,839	74,590	31,226	53,285
Other grades	11	12	43	81	88
LIVERPOOL					
Plantation	†3,701	†941	†23,849	†4,590	†2,485
Total tons, London and Liverpool	14,302	5,792	98,482	35,897	55,858

†Official returns from the recognized public warehouses.

Low and High New York Spot Prices

PLANTATIONS	1930*	June 1929	1928
Thin latex crepe	$0.12⅛@$0.14¼	$0.21⅛@$0.22⅛	$0.19⅛@$0.19⅞
Smoked sheet, ribbed	.11¾@ .13¾	.20 @ .21½	.19 @ .19¾
PARAS			
Upriver, fine	.14 @ .15¼	.21¾@ .23½	.20 @ .23½
Upriver, coarse	.07 @ .07¼	.11½@ .12½	.14½@ .16
Upper caucho ball	.07 @ .07¼	.11½@ .12½	.13 @ .15½

*Figured to June 25, 1930.

Tire Production Statistics

	High Pressure Pneumatic Casings: All Types In-ventory	All Types Produc-tion	All Types Total Shipments	Cord In-ventory	Cord Produc-tion	Cord Total Shipments
1928	10,217,708	58,457,873	55,721,937	3,580,576	19,302,218	19,351,380
1929	9,470,368	54,980,672	55,515,884	2,290,236	13,765,025	15,016,460
1930						
January	9,539,353	3,558,862	3,525,404	2,382,959	804,783	713,713
February	9,928,838	3,644,606	3,355,844	2,474,495	662,419	599,599
March	10,010,173	3,890,981	3,773,865	2,458,117	572,417	588,613
April	10,461,208	4,518,034	4,071,822	2,493,603	656,281	610,308

	Balloon Casings In-ventory	Balloon Casings Produc-tion	Balloon Casings Total Shipments	Solid and Cushion Tires In-ventory	Solid and Cushion Tires Produc-tion	Solid and Cushion Tires Total Shipments
1928	6,594,978	38,878,218	35,931,982	152,120	508,223	512,602
1929	7,160,127	41,128,577	40,377,781	122,200	409,344	427,779
1930						
January	7,139,154	2,779,864	2,805,740	126,784	25,049	21,476
February	7,436,247	2,975,922	2,750,324	127,793	22,302	21,005
March	7,535,468	3,311,978	3,177,634	123,179	19,329	23,951
April	7,951,317	3,854,540	3,454,171	116,595	17,335	24,232

	High Pressure Inner Tubes In-ventory	High Pressure Inner Tubes Produc-tion	High Pressure Inner Tubes Total Shipments	Balloon Inner Tubes In-ventory	Balloon Inner Tubes Produc-tion	Balloon Inner Tubes Total Shipments
1928	5,037,716	23,255,891	23,749,966	7,049,748	36,878,990	34,095,223
1929	3,339,451	16,100,281	17,718,806	6,889,213	38,921,749	38,719,177
1930						
January	3,233,813	783,709	889,208	6,911,422	2,898,682	2,992,752
February	3,243,130	675,126	680,989	7,171,395	3,030,745	2,786,578
March	3,137,472	619,416	696,161	7,392,794	3,331,739	3,082,456
April	3,144,558	678,152	674,032	7,871,181	3,728,177	3,202,261

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1928	222,243,398	600,423,401	13,633,452,000
1929	208,824,653	583,039,984	14,748,552,000
1930			
January	14,559,163	42,108,149	1,080,660,000
February	13,766,977	40,378,929	1,060,640,000
March	14,655,987	43,910,926	1,241,240,000
April	17,263,963	51,151,863	1,382,400,000

Rubber Manufacturers Association figures representing 75 per cent of the industry.

Comparative Tire Statistics for April

Statistics relating to the tire industry for April as compared to previous periods compiled by The Rubber Manufacturers Association are as follows:

	Production	Shipments	Inventory End of Month
PNEUMATIC CASINGS			
Apr., 1930	6,024,045	5,429,096	13,948,277
Mar., 1930	5,187,970	5,031,820	13,468,970
Apr., 1929	7,883,805	7,294,372	16,929,077
INNER TUBES			
Apr., 1930	5,877,373	5,171,596	14,703,614
Mar., 1930	5,270,560	5,042,385	14,057,360
Apr., 1929	7,634,325	7,164,053	18,134,007
SOLIDS AND CUSHIONS			
Apr., 1930	23,113	32,309	155,460
Mar., 1930	25,772	31,935	164,238
Apr., 1929	51,225	57,507	183,484

The association's estimates are based on reports furnished by manufacturers who produce approximately 75 per cent of the total for the United States, but which have been adjusted to 100 per cent in the above tables.

Reported Rubber Stocks

Producing Centers	Long Tons 1929 Nov.	Dec.	Long Tons 1930 Jan.	Feb.	Mar.	Apr.
Singapore	25,974	27,949	28,475	32,074	32,629	34,005
Penang	4,989	5,208	4,993	5,476	5,500	5,575
Para	3,237	3,103	3,447	3,545	3,596	3,596
Totals	34,200	36,260	36,915	41,095	41,725	43,176
Manufacturing Centers						
London	52,454	54,304	60,434	64,557	68,923	74,676
Liverpool	17,655	18,949	19,849	20,605	21,098	23,849
Amsterdam	2,150	2,179	2,134	2,159	2,220	2,204
United States	92,219	105,138	120,649	131,748	141,843	148,272
Plantations afloat*	88,869	90,840	94,828	97,931	96,297	85,875
Totals	253,347	271,410	297,894	317,000	330,381	334,876
Grand totals	287,547	307,670	334,809	358,095	372,106	378,052

*W. H. Rickinson & Son, *The World's Rubber Position.*
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	March, 1930		Three Months Ended March, 1930	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	100,743,533	$14,652,794	302,754,602	$47,244,597
Liquid latex	624,363	107,847	2,233,760	456,398
Jelutong or Pontianak	1,168,977	128,844	3,131,759	363,315
Balata	36,498	12,498	216,968	86,366
Gutta percha	.....	.....	.....	.....
Guayule	334,591	50,456	838,591	131,684
Siak, scrap and reclaimed	1,020,609	13,022	2,710,336	43,481
Totals	103,928,571	$14,965,461	311,886,016	$48,325,841
Chicle *Dutiable*	1,373,290	$715,211	3,893,976	$2,005,080
MANUFACTURED—*Dutiable*				
Belting	.....	.....	1,920	1,369
Tires *number*	471	13,538	1,073	29,641
Other rubber manufactures	.....	132,717	.....	405,393
Totals	.....	$146,255	.....	$436,403

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	7,138,026	$1,192,708	19,287,050	$3,230,913
Balata	917,499	164,644	971,157	183,681
Gutta percha, rubber substitutes, and scrap	22,843	572	24,224	869
Rubber manufactures	.....	11,648	.....	17,940
Totals	8,078,368	$1,369,572	20,282,431	$3,433,403

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	2,347,750	$146,601	7,180,339	$446,928
Scrap and old	5,321,965	202,844	14,591,867	587,347
Rubberized automobile cloth *sq. yd.*	93,854	52,486	341,299	179,141
Other rubberized piece goods and hospital sheeting, *sq. yd.*	177,509	75,062	395,373	162,049
Footwear				
Boots *pairs*	45,441	105,698	185,277	404,699
Shoes *pairs*	101,234	78,011	383,686	401,793
Canvas shoes with rubber soles *pairs*	533,644	356,280	1,219,562	841,726
Soles *doz. pairs*	11,545	34,634	38,746	112,284
Heels *doz. pairs*	97,593	69,097	325,809	227,312
Water bottles and fountain syringes *number*	22,249	10,947	96,961	47,530
Gloves *doz. pairs*	8,460	22,625	29,968	78,354
Other druggists' sundries	.....	31,132	.....	78,297
Balloons *gross*	63,448	63,922	196,653	199,092
Toys and balls	.....	7,681	.....	24,504
Bathing caps *doz.*	36,953	79,030	65,269	148,319
Bands	73,221	32,019	153,579	71,365
Erasers	60,133	33,985	127,348	75,791
Hard rubber goods				
Electrical goods	96,778	23,816	361,661	58,899
Other goods	.....	49,839	.....	110,868
Tires				
Truck and bus casings, *number*	39,564	938,596	117,785	2,724,738
Other automobile casings, *number*	176,993	1,551,719	532,507	4,618,362
Tubes, auto *number*	137,788	243,554	402,624	713,164
Other casings and tubes, *number*	7,584	22,001	18,916	61,335
Solid tires for automobiles and motor trucks, *number*	3,219	96,680	8,311	266,176
Other solid tires	154,693	28,998	385,015	71,888
Tire accessories	.....	105,563	.....	322,035
Rubber and friction tape	108,365	29,885	367,471	101,232
Belting	445,250	222,129	1,335,909	680,212
Hose	796,827	267,473	2,225,852	758,074
Packing	204,849	88,656	524,874	255,690
Thread	183,476	178,117	522,836	505,012
Other rubber manufactures	.....	255,598	.....	696,523
Totals	.....	$5,504,678	.....	$16,030,739

Crude Rubber Imports by Customs Districts

	*April, 1930		Four Months Ended *April, 1930	
	Pounds	Value	Pounds	Value
Massachusetts	3,135,623	$566,150	14,785,138	$2,481,019
New York	80,046,043	11,728,969	346,609,028	53,520,125
Philadelphia	1,118,483	150,644	4,256,052	611,498
Maryland	720,780	92,939	2,715,770	355,491
Virginia	252,512	31,857	762,094	97,000
Georgia	1,439,225	176,697	2,482,478	314,918
Los Angeles	8,366,666	1,162,942	24,188,137	3,552,705
San Francisco	133,454	20,751	598,648	94,665
Oregon	33,600	6,207	56,034	9,676
Dakota	.....	.....	42,590	6,288
Wisconsin	.....	.....	266,180	44,792
Ohio	6,385,588	853,671	9,295,810	1,309,839
Colorado	620,480	91,017	1,182,857	184,823
Totals	102,252,454	$14,881,844	407,240,816	$62,582,839

*Including latex, dry rubber content.

United Kingdom Statistics

IMPORTS

	April, 1930		Four Months Ended April, 1930	
UNMANUFACTURED				
Crude Rubber				
From—	Pounds	Value	Pounds	Value
Straits Settlements	17,970,900	£575,025	68,177,400	£2,218,001
Federated Malay States	8,538,000	274,199	27,289,900	892,938
British India	1,178,500	38,999	6,576,500	215,656
Ceylon and Dependencies	1,584,200	50,789	13,315,900	432,623
Java and Dutch Borneo	2,727,400	88,079	10,689,100	354,804
Sumatra and other Dutch possessions in Indian Seas	2,365,000	86,821	7,494,800	251,713
Other countries in East Indies and Pacific not elsewhere specified	359,100	11,617	1,293,600	43,427
Brazil	126,200	4,248	2,183,100	72,718
South and Central America (except Brazil)	11,200	350	122,200	3,719
West Africa				
French West and Equatorial Africa	.....	.....	138,500	4,511
Gold Coast	65,600	2,075	141,800	4,545
Other parts of West Africa	137,800	5,020	506,100	18,405
East Africa, including Madagascar	76,300	2,619	304,000	9,878
Other countries	286,700	9,581	1,075,800	37,960
Totals	35,426,900	£1,149,422	139,308,700	£4,560,898
Gutta percha and balata	466,600	38,514	1,861,800	148,196
Waste and reclaimed rubber	732,400	9,012	3,306,500	42,047
Rubber substitutes	14,400	307	72,500	1,393
Totals	36,640,300	£1,197,255	144,549,500	£4,752,534
MANUFACTURED				
*Tires and tubes				
Pneumatic				
Outer covers	.....	£40,370	.....	£111,587
Inner tubes	.....	9,192	.....	27,722
Solid tires	.....	3,357	.....	14,760
Boots and shoes *doz. pairs*	168,605	177,875	593,676	628,972
Other rubber manufactures	.....	213,402	.....	868,495
Totals	.....	£444,196	.....	£1,651,536

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	2,074,500	£15,060	8,162,700	£64,207
Rubber substitutes	77,500	1,596	191,900	4,153
Totals	2,152,000	£16,656	8,354,600	£68,360
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£322,017	.....	£1,465,709
Inner tubes	.....	48,965	.....	207,294
Solid tires	.....	8,039	.....	30,842
Boots and shoes *doz. pairs*	23,958	31,042	93,773	128,504
Other rubber manufactures	.....	211,583	.....	868,911
Totals	.....	£621,646	.....	£2,701,260

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude rubber				
To—				
Russia	170,700	£7,673	6,959,300	£267,783
Sweden, Norway, and Denmark	143,200	5,914	545,000	23,678
Germany	2,679,700	88,296	9,720,000	325,618
Belgium	510,200	18,110	2,641,100	97,115
France	1,805,900	63,690	7,739,300	295,281
Spain	31,800	1,972	278,000	12,162
Italy	427,900	14,731	1,236,100	44,303
Other countries in Europe	261,000	12,381	1,349,800	58,237
United States	58,400	1,650	2,089,900	64,168
Other countries	88,000	4,797	499,000	24,196
Totals	6,176,800	£219,214	33,057,500	£1,212,541
Gutta percha and balata	119,200	9,489	237,300	20,243
Waste and reclaimed rubber	4,600	135	17,700	407
Rubber substitutes	1,500	30	1,500	30
Totals	6,302,100	£228,868	33,314,000	£1,233,221
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£3,342	.....	£16,893
Inner tubes	.....	444	.....	2,533
Solid tires	.....	15	.....	75
Boots and shoes *doz. pairs*	2,648	4,602	7,304	13,066
Other rubber manufactures	.....	5,182	.....	27,408
Totals	.....	£13,585	.....	£59,975

*Motor cars, motorcycles, parts, and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts, and accessories were exempt from duty until Apr. 30, 1926, inclusive, and rubber tires and tubes until Apr. 11, 1927, inclusive.

World Rubber Absorption

Long Tons

	Calendar Years		1930			
CONSUMPTION	1928	1929	Feb.	Mar.	Apr.	May
United States	441,400	528,608	40,793	42,216	43,036	40,459
United Kingdom	48,504	122,675	10,923	12,346	13,058	9,861
NET IMPORTS						
Australia	8,430	15,886	457	975	673	‡
Austria	3,043	3,324	284	160	337	274
Belgium	7,958	9,445	1,143	678	1,431	‡
Canada	30,447	35,453	2,250	3,776	2,303	‡
Czechoslovakia	3,138	4,650	239	263	‡	‡
Denmark	566	799	127	43	105	‡
Finland	768	976	60	75	57	‡
France	36,498	59,342	4,482	4,354	4,962	‡
Germany	37,855	49,078	3,697	4,289	4,488	‡
Italy	12,433	17,169	1,385	1,083	2,067	‡
Japan	25,621	34,284	1,386	2,485	‡	‡
Netherlands	2,243	3,022	188	358	158	‡
Norway	728	813	35	72	91	‡
Russia	15,134	12,626	2,128	948	‡	‡
Spain	.....	2,400	*200	*200	‡	‡
Sweden	2,356	3,857	93	132	207	‡
Switzerland	566	653	43	85	27	‡
Others estimated†	8,000	.....	.....	.....	.....	‡
Grand totals	685,688	905,060	69,913	74,538	73,000	‡
Minus United States	441,400	528,608	40,793	42,216	43,036	40,459
Total foreign	244,288	376,452	29,120	32,322	29,964	‡

*Estimate to complete table. †Includes Argentina, Brazil, Chile, China, Cuba, Egypt, Estonia, Hungary, Latvia, Mexico, Poland, Portugal, Spain, and Union of South Africa. ‡Not available.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Production—Net Exports

Long Tons

	Calendar Years		1930			
British Malaya	1928	1929	Feb.	Mar.	Apr.	May
Gross Exports	409,500	579,524	48,947	47,320	43,813	49,488
Imports	149,787	161,612	12,960	13,236	14,627	13,253
Net	259,713	417,912	35,987	34,084	29,186	36,235
Ceylon	57,271	80,795	8,055	6,617	4,444	5,947
India and Burma	10,790	11,720	1,245	1,129	856	†
Sarawak	10,087	11,079	878	976	1,026	917
Br. No. Borneo	6,698	7,381	*600	*600	*600	*600
Siam	4,813	5,024	477	399	428	350
Java and Madura	58,848	66,010	6,900	5,796	4,802	†
Sumatra E. Coast	82,511	87,589	7,191	6,612	6,326	†
Other N. E. Indies	121,671	134,732	11,414	11,070	12,582	†
French Indo-China	9,616	10,147	944	643	433	753
Amazon Valley	21,129	21,148	1,787	1,674	1,201	1,383
Other America	1,490	996	33	80	97	†
Mexican Guayule	3,076	1,275	75	148	75	172
Africa	6,124	4,596	362	308	*300	†
Totals	653,837	860,404	75,948	70,136	62,356	.....

*Estimate. †Not available.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for May, 1930:

RUBBER EXPORTS

Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham.

	May, 1930	
To:	Rubber Tons	Latex Tons
United Kingdom	9,068	78
United States	32,849	161
Continent of Europe	4,758	109
British possessions	204	1
Japan	1,722	...
Other countries	89	...
Totals	48,690	349

RUBBER IMPORTS

Actual Imports by Land and Sea

	May, 1930	
FROM:	Dry Rubber Tons	Wet Rubber Tons
Sumatra	537	6,239
Dutch Borneo	472	3,708
Java and other Dutch islands	130	68
Sarawak	877	40
British Borneo	132	15
Burma	185	37
Siam	143	207
French Indo China	362	19
Other countries	57	25
Totals	2,895	10,358

Hawley-Smoot Tariff Bill of 1930

The following is a comparison of the rates of the newly enacted Hawley-Smoot Tariff Act and the rates of the Tariff Act of 1922 on certain materials commonly used in the manufacture of rubber goods.

Commodity	Act of 1922	Act of 1930
Carbon dioxide, weighing with immediate containers and cartons, 1 lb. or less per carton	25%	1c per lb.
Carbon tetrachloride	2½c per lb.	1c per lb.
Chalk or whiting or Paris white, dry, ground, or bolted	25%	4/10c per lb.
Precipitated		25%
Chicle, crude	10c per lb.	Free
Refined or advanced in value by drying, etc.	15c per lb.	5c per lb.
Hexamethylenetetramine	25%	11c per lb.
Manufactures of carbonate of magnesia	30%	2c per lb.
Oxide or calcined magnesia	3½c per lb.	7c per lb.
Bone black or bone char and blood char	20%	20%
Carbon black	20%	20%
Vermilion red containing quicksilver dry or ground in or mixed with oil or water	28c per lb.	35c per lb.
Lithopone and other combinations or mixtures of zinc, sulphide and barium sulphate, containing more than 30% of zinc sulphide	1¾c per lb.	1¾c + 15%
Lithopone containing less than 30%	1¾c per lb.	1¾c + 15%
Pumice stone wholly or partly manufactured	.55/100 of 1c per lb.	¾ of 1c per lb.
Bentonite unwrought and unmanufactured	$1 per ton	$1.50 per ton
Bentonite wrought manufactured	$2 per ton	$3.25 per ton
Casein or lactarene	2½c per lb.	5½c per lb.
Mixtures of	20%	5½c per lb.
Mica, unmanufactured, valued at above 15c per lb.	25%	4c per lb. + 35%
Talc, steatite or soapstone, and French chalk, ground, washed, powdered, or pulverized (except toilet preparations)	25%	35%
Tire fabric, including cord fabric	25%	25%
Belts and belting for machinery: Wholly or in chief value of cotton or other vegetable fiber and rubber	30%	30%
Elastic fabrics made in part of rubber		60%
Fabrics with fast edges not exceeding 12 inches in width and articles made therefrom, wholly or in chief value of cotton and rubber		35%
Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom, wholly or in chief value of rayon or other synthetic textile, or of rayon and other synthetic textile and rubber		45c per lb. + 60%
Beeswax, crude	Free	Free
Baseballs, footballs, tennis balls, golf balls		30%
Chicle, n. s. p. f.	10c per lb.	Free
Manufactures of rubber or gutta percha		25%
Automobile, motorcycle, and bicycle tires		10%
Insulators and materials composed wholly or in chief value of rubber and gutta percha		30%
Manufactures of hard rubber		35%

Ceylon Rubber Exports

January 1 to April 15, 1930

To:	Tons
United Kingdom	5,054.65
Continent	2,238.72
Other countries in Europe	11.54
Australia	823.12
America	17,112.59
Canada and Newfoundland	2.50
Other countries in America	55.80
Egypt	4.00
Africa	1.18
India	29.16
Japan	109.09
Other countries in Asia	.66
Total	25,443.01
For the same period last year	24,937.78

Annual Exports, 1922-1929

	Tons
For the year 1929	80,476.44
1928	57,825.48
1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14

Letters from Our Readers

Standard Laboratory Procedure

To the Editor:

Dear Sir: Examination of the methods outlined for standard laboratory procedure[1] leaves the impression that university facilities rather than those of factory laboratories are considered as being available to all interested in testing rubber. Many factory laboratories have an accumulation of comparative data which is of real value to those operating the laboratory although it may be at a variance with similar data obtained by others in another factory. These data have been determined with present equipment, and any major changes either in method or equipment would not only tend to lower the value of this accumulated data but would also increase the difficulty of properly evaluating and applying to production the results obtained after a change is made.

The following illustrate the reactions of a man primarily interested in transforming laboratory results to factory practice.

At present a considerable variety of sizes and styles exists in laboratory mill equipment. Each laboratory obtains significant data with its present equipment, and many would consider the expense of buying new mills unjustified.

The recommended temperature of 158° F. seems to be out of line. In practice much money is expended for equipment to keep the temperature of water for circulation through the mills between 40 to 50° F. As the laboratory is called upon to provide the factory with milling data, it seems logical to use identical cooling water and avoid variations likely to cause complications.

The suggested method of adding ingredients to the broken down rubber may be improved upon by adding the softeners first and then the others as outlined.

A precise technique of mixing, applicable to all types of mixes as suggested, would be productive of many unsatisfactory results. Variations in the plasticity of rubber, in speed of dispersion of various pigments, and degree of loading necessitate variations in time, temperature, and handling, so that the use of any one procedure would be undesirable.

It appears that tire stocks only were considered when the "Preparation of Raw Stock for Curing" paragraph was written. Plasticity, degree of loading, type of filler and fluxes are important properties to be considered when sizing a batch of stock for cure. A piece of soft friction compound will fill out a mold much more rapidly than will a piece of highly compounded stock, which is reason enough to demand various sized pieces. An experienced operator can size for cure a variety of stocks of widely different compositions and obtain a uniform overflow without the use of precise measurements.

Curing stocks in molds which have not been treated either with talc or a solution designed to prevent sticking will cause high wastage. To specify the use of untreated molds will introduce an avoidable difficulty as many stocks will tear and rip during removal.

Few among the many laboratories testing rubber goods are equipped to control the relative humidity or the temperature of the air in their testing rooms. To condition stocks in a controlled cabinet and then test them in a room in which the air is not so controlled is not an advance toward accuracy. Whatever errors and inaccuracies there may be due to uncontrolled relative humidity and temperature, they are not of sufficient magnitude to justify the expense of new equipment.

When measuring the gage of a test piece, it seems more logical to take the reading at the thinnest portion of the constricted area rather than the average, as the rubber will break at that point and not at that matching the average thickness.

Testing temperature in most factory laboratories is that of time, place, and season and not subject to such close control as recommended.

When evaluating stocks, the modulus is much more informative and less variable than the tensile and elongation at break. In practice each point of the curve is considered and a more comprehensive picture of results obtained than can be gained by the consideration of isolated points or the load and tensile at break only.

Constant vigilance and continuous effort to maintain uniform conditions in the laboratories as they now are seem to the writer of greater value to those engaged in operating the plants, than striving to standardize the laboratory equipment of the industry. Tools and conditions may be identical, but results obtained will differ.

June 11, 1930. Factory Chemist.

[1] "Tentative Standard Laboratory Procedure," India Rubber World, Feb. 1, 1930, pp. 71-72.

Anti-Squeak Rubber Dough

To the Editor:

Dear Sir: I am interested in a paragraph on "Rubber Dough Anti-Squeak," that appeared on page 70 of your May issue, and desire to know more about the preparation. I imagine it to be a sponge rubber mixture which becomes cellular when passing through the enameling ovens. I shall greatly appreciate any further information concerning the material.

May 15, 1930. Consultant.

We do not know just what this material is; however, a stock that would probably serve the same purpose can be prepared according to the following two-part mixing.

Ingredients	A	B
Pale crepe	50	—
Smoked sheets	—	50
Zinc oxide	5	5
Sulphur	—	6
Zimate	2	—

The two portions should be made into separate cements with high test gasoline in the ratio of one pound of stock per gallon of gasoline. When desired for use, mix equal volumes of *A* and *B* together thoroughly and apply the mixture with a brush to the surfaces to be joined.

There are two reasons for making this stock in split batches: (1) the remarkably low temperature of activity of zimate may cause complete cements containing it and sulphur to set at room temperatures; (2) mixed stocks containing this accelerator, zinc oxide, and sulphur will cure up in storage. This setting or jelling of a zimate cement with sulphur is retarded by gasoline and it will probably not be necessary therefore for the manufacturer using it to maintain a split cement in his regular factory production, provided gasoline is used as a solvent.

If either benzol or carbon bisulphide is used for the solvent, a split cement will probably be necessary since these two solvents do not retard the jelling. In any event, no matter what solvent is used, the stock should be mixed on the mills in two portions as indicated. The Editor.

Mold Cleaning Solutions

To the Editor:

Dear Sir: When our molds get really dirty, we have two methods of cleaning them, which are as follows: (1) To 1,800 cc. of water add 330 cc. muriatic acid, 30 cc. formaldehyde. Apply to mold surface and scrub with wire brush. Wash with clear water and then dust with lime to dry off excess moisture. If it is to be used directly in production, remove the lime and place the mold in a hot press. If it is to be stored, remove the lime and oil the mold. (2) To 10 gallons of water add 5 pounds of caustic soda and boil 24 hours.

Certain stocks require different mold solutions, and the following are recommended. For non-blooming black stocks: (1) To 1 gallon of water add 5 cakes of miniature ivory soap and boil for 15 minutes. (2) To 25 gallons of water add 5 pounds of Rusco mold paste. For blooming stocks: To 1 gallon of water add 5 cakes of miniature ivory soap, ½ pound C. P. glycerine, and boil 15 minutes.

For colored stocks a weak solution of Rusco is excellent, and for white stocks Pyrax A. is recommended. Sugar in the mold wash usually makes the goods sticky, which is a detriment, particularly when they are tumbled in order to remove the flash.

June 5, 1930. Factory Manager.

Pará Preferred to Plantation

The Ceylon Rubber Research Scheme is trying to find out why in some minor uses the choicest plantation rubber is sidetracked in favor of the Brazilian fine hard Pará. This is true especially in the making of fine quality tape and thread for elastic webbing, winding golf ball cores, etc., it being claimed that the Brazilian material stands up much better than best plantation grades under severe working, as well as adapting itself better to the 5 to 5½-hour hot water cure.